

Nguzu Nguzu Mathematics

Teacher's Guide



Standard 3

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First edition 1999

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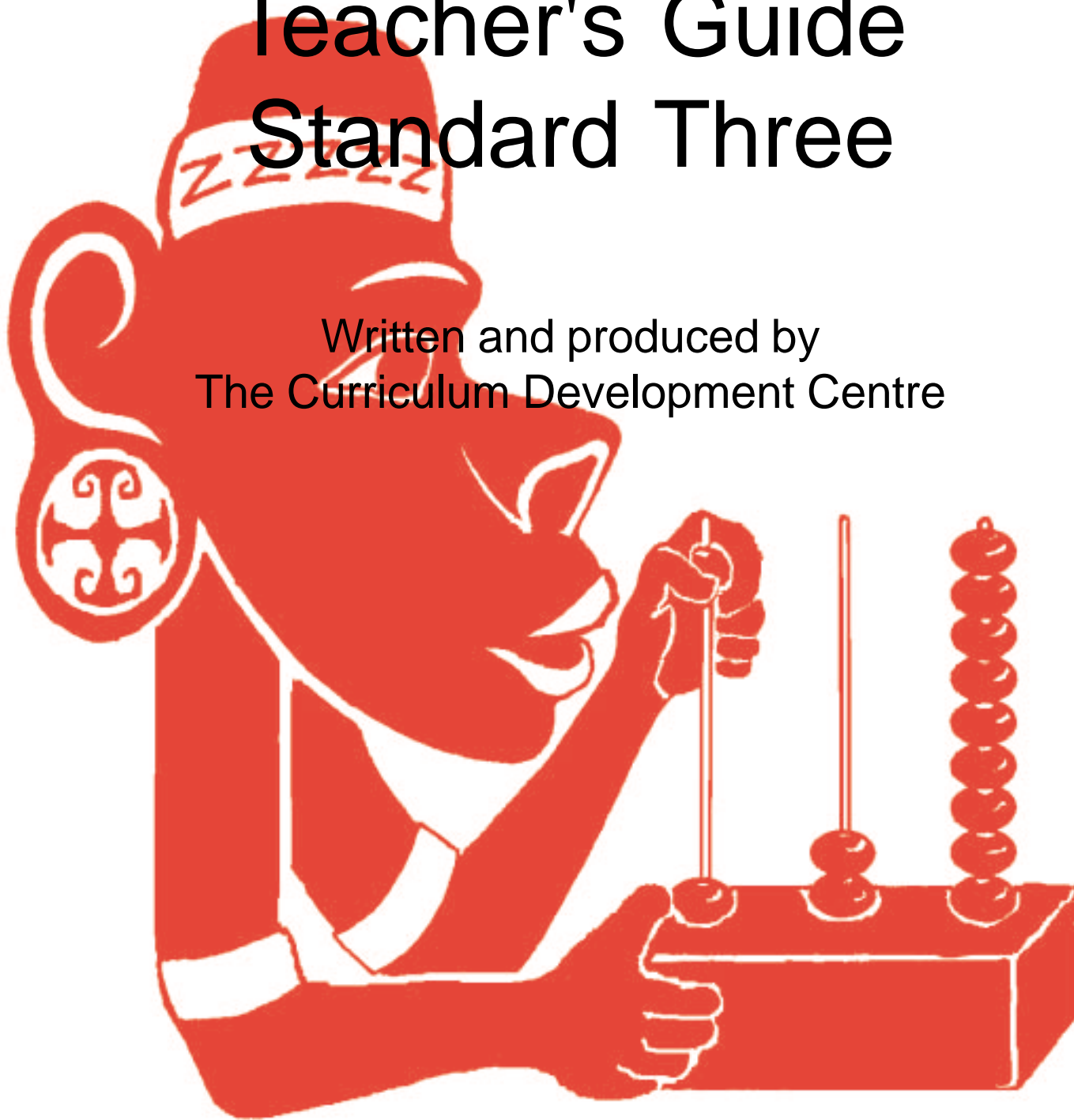
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Four term arrangement of units and topics for Standard Three.

Term 1	Term 2	Term 3	Term 4
Unit 1 Number: topics 1 & 2	Unit 6 Number: topics 6 & 7	Unit 11 Number: topics 11 & 12	Unit 16 Money: topic 26
Unit 2 Shape: topic 16	Unit 7 Measurement: topic 22	Unit 12 Measurement: topic 23	Unit 17 Number: topic 15
Unit 3 Number: topic 3	Unit 8 Number: topic 8	Unit 13 Number: topic 13	Unit 18 Shape: topic 17
Unit 4 Measurement: topics 20 & 21	Unit 9 Graphs: topic 18	Unit 14 Time: topic 25	Unit 19 Measurement: topic 24
Unit 5 Number: topics 4 & 5	Unit 10 Number: topics 9 & 10	Unit 15 Number: topic 14	Unit 20 Graphs: topic 19

Nguzu Nguzu Mathematics Teacher's Guide Standard Three

Written and produced by
The Curriculum Development Centre



PRIMARY MATHEMATICS SYLLABUS

STANDARDS ONE TO THREE



MINISTRY OF EDUCATION AND HUMAN
RESOURCES DEVELOPMENT
1998

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Foreword

The development of this new Primary Mathematics Syllabus for Standards One to Three 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 of knowledge and skills it contains. A lecturing style of teaching is not effective at Standards One, Two and Three.

The accompanying teaching and learning materials; teacher's in-service course, teacher's guides and pupils' texts, place mathematics in a local context, using examples and situations which 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.



Honourable Ronidy Mani
Minister for Education and Human Resources Development

Syllabus

Acknowledgements

The Ministry of Education and Human Resources Development is grateful to all those whose work has led to the development of this syllabus and the accompanying materials and resources.

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 in 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 Standards One, Two and Three, but we do know that the world is changing at a rapid rate. In order to cope with these changes, 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.

Syllabus**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.

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.

The arrangement below shows a suggested plan to cover all the 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 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.

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

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Standard Two

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

Standard Three

Term 1	Term 2	Term 3	Term 14
Unit 1 Number: topics 1 & 2	Unit 6 Number: topics 6 & 7	Unit 11 Number: topics 11 & 12	Unit 16 Money: topic 26
Unit 2 Shape: topic 16	Unit 7 Measurement: topic 22	Unit 12 Measurement: topic 23	Unit 17 Number: topic 15
Unit 3 Number: topic 3	Unit 8 Number: topic 8	Unit 13 Number: topic 13	Unit 18 Shape: topic 17
Unit 4 Measurement: topics 20 & 21	Unit 9 Graphs: topic 18	Unit 14 Time: topic 25	Unit 19 Measurement: topic 24
Unit 5 Number: topics 4 & 5	Unit 10 Number: topics 9 & 10	Unit 15 Number: topic 14	Unit 20 Graphs: topic 19

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.

Syllabus

Theme objectives: Standard One			
Themes	Children should have knowledge of:	Children should have skills in:	Children's attitudes should include:
Number	<ul style="list-style-type: none"> the nature and structure of the number system 0 to 100 the concept of addition and subtraction of whole numbers with answers up to 20 the concept of fractional parts 	<ul style="list-style-type: none"> reading, writing and ordering numbers up to 100 adding and subtracting whole numbers with answers up to 20 	<ul style="list-style-type: none"> the recognition that mathematics is relevant to their daily lives the recognition that mathematics is a useful tool the confidence to readily use objects and materials to assist in computation
Shape	<ul style="list-style-type: none"> the names of common three and two-dimensional shapes appropriate language to describe common three and two-dimensional shapes the concept of reflective symmetry 	<ul style="list-style-type: none"> recognising, naming, describing and comparing common three and two-dimensional shapes forming symmetrical patterns 	<ul style="list-style-type: none"> to appreciate the presence of three-dimensional, two-dimensional and symmetrical shapes in the environment
Graphs	<ul style="list-style-type: none"> the concept of pictorial representation of data in a pictogram 	<ul style="list-style-type: none"> making and reading simple graphs 	<ul style="list-style-type: none"> to appreciate that information can be represented by graphs
Measurement	<ul style="list-style-type: none"> the concept of length, weight and capacity the conservation of length, weight and capacity 	<ul style="list-style-type: none"> practical comparison and measuring of length, weight and capacity using non-standard units 	<ul style="list-style-type: none"> the recognition that the measurement of length, weight and capacity are relevant activities in their daily lives
Time	<ul style="list-style-type: none"> the passage of time the relationship between time and daily activities 	<ul style="list-style-type: none"> recognition of the clock face 	<ul style="list-style-type: none"> the recognition that time is relevant to their daily lives
Money	<ul style="list-style-type: none"> common coins and notes and their value 	<ul style="list-style-type: none"> recognising common coins and notes using coins and notes in play activities 	<ul style="list-style-type: none"> that the use of coins and notes is relevant in their daily lives

Theme objectives: Standard Two			
Themes	Children should have knowledge of:	Children should have skills in:	Children's attitudes should include:
Number	<ul style="list-style-type: none"> the nature and structure of the number system 0 to 999 the concept of addition and subtraction of whole numbers the concept of fractional parts 	<ul style="list-style-type: none"> reading, writing and ordering numbers up to 999 adding and subtracting whole numbers, including regrouping simple multiplication by repeated subtraction recognition and comparison of fractional parts 	<ul style="list-style-type: none"> the recognition that mathematics is relevant to their daily lives an appreciation of mathematics as a useful tool an appreciation of the structure and pattern of the decimal number system
Shape	<ul style="list-style-type: none"> the mathematical names of common three and two-dimensional shapes appropriate language to describe common three and two-dimensional shapes the concept of reflective symmetry 	<ul style="list-style-type: none"> recognising, naming, describing and comparing common three and two-dimensional shapes using mathematical terms recognising and forming symmetrical patterns 	<ul style="list-style-type: none"> an appreciation of the presence of three and two-dimensional and symmetrical shapes in the environment
Graphs	<ul style="list-style-type: none"> the concept of pictorial representation of data in horizontal and vertical block graphs 	<ul style="list-style-type: none"> making and reading simple horizontal and vertical block graphs 	<ul style="list-style-type: none"> an appreciation that information can be represented on and readily retrieved from block graphs
Measurement	<ul style="list-style-type: none"> the concept of length, weight capacity and area the conservation of length, weight area and capacity non-standard and standard measures of length, capacity and weight 	<ul style="list-style-type: none"> practical comparison and measuring of length, weight, area and capacity using non-standard and standard units the use of measuring devices such as rulers, containers and balances 	<ul style="list-style-type: none"> the recognition that the measurement of length, weight, perimeter, area and capacity are relevant activities in their daily lives an appreciation that there is a need for standard units of measure
Time	<ul style="list-style-type: none"> the passage of time the relationship between the clock face, time and daily activities the names and order of the days of the week and months of the year 	<ul style="list-style-type: none"> telling the time on the hour and half past the hour 	<ul style="list-style-type: none"> an appreciation that time is relevant to their daily lives an appreciation that measuring and recording time is a necessary part of life
Money	<ul style="list-style-type: none"> common coins and notes and their value the equivalence of quantities of coins and notes 	<ul style="list-style-type: none"> recognising common coins and notes using coins and notes in play activities with greater accuracy 	<ul style="list-style-type: none"> the recognition that the use of coins and notes is relevant in their daily lives

Syllabus

Theme objectives: Standard Three			
Themes	Children should have knowledge of:	Children should have skills in:	Children's attitudes should include:
Number	<ul style="list-style-type: none"> the nature and structure of the number system 0 to 9999 the concept of addition and subtraction of whole numbers with regrouping and trading the concept of multiplication and division the concept of fractional parts and fractional notation 	<ul style="list-style-type: none"> reading, writing and ordering numbers up to 9999 adding, subtracting, multiplying and dividing whole numbers, including regrouping and trading mental addition and subtraction recognition, comparison and notation of fractions 	<ul style="list-style-type: none"> the recognition that mathematics is relevant to their daily lives an appreciation of mathematics as a useful tool an appreciation of the structure and pattern of the decimal number system a willingness to try different methods to solve mathematical problems
Shape	<ul style="list-style-type: none"> appropriate language to describe angles and shapes the concept of rotational symmetry 	<ul style="list-style-type: none"> recognising angles in shapes in the environment recognising and forming symmetrical patterns involving rotational symmetry 	<ul style="list-style-type: none"> an appreciation of the presence of right angles, shapes and symmetry in the environment
Graphs	<ul style="list-style-type: none"> the use of scales on measuring devices the use of tally charts and bar graphs 	<ul style="list-style-type: none"> collecting data on a tally chart representing and reading data on a bar chart 	<ul style="list-style-type: none"> an appreciation that information can be collected, represented and readily retrieved from graphs
Measurement	<ul style="list-style-type: none"> the concept of area and perimeter non-standard and standard measures of length, capacity and weight 	<ul style="list-style-type: none"> investigation of the relationships between perimeter and area measuring length, perimeter and area the use of measuring devices such as rulers, containers and balances 	<ul style="list-style-type: none"> the recognition that the measurement of length, weight, perimeter, area and capacity are relevant activities in their daily lives an appreciation that there is a need for standard units of measure
Time	<ul style="list-style-type: none"> the passage of time the relationship between the clock face, time and daily activities the names and order of the days of the week and months of the year 	<ul style="list-style-type: none"> telling the time in minutes past and minutes to the hour calculating time intervals in minutes and hours representing given times by drawing the hands on a clock face 	<ul style="list-style-type: none"> an appreciation that time is relevant to their daily lives an appreciation that measuring and recording time is a necessary part of life
Money	<ul style="list-style-type: none"> common coins and notes and their value the equivalence of quantities of coins and notes 	<ul style="list-style-type: none"> recognising common coins and notes using coins and notes in play activities with greater accuracy computing amounts, prices and change 	<ul style="list-style-type: none"> the recognition that the use of coins and notes is relevant in their daily lives

Scope and sequence

The following pages contain the scope and sequence tables for Standards One, Two and Three.

Each scope and sequence table includes theme titles, numbered topics and the recommended teaching and learning activities for each topic. The teaching methodology and suggested activities are of equal importance to the content of the syllabus.

Syllabus

Standard One	
Number	
Topics	Activities
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 take 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 ten 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 tens 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	Activities
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	Activities
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

Syllabus

Standard One	
Measurement	
Topics	Activities
14. Concept of length	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 large light ones
17. Weighing with non-standard units	<ol style="list-style-type: none"> 1. Weighing objects on a balance using non-standard units of about the same size, such as stones, shells, etc as units of weight
18. Concept of capacity	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	Activities
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	Activities
23. Recognising common coins and notes	1.Counting money, playing shop, buying and selling

Syllabus

Standard Two	
Number	
Topics	Activities
1. Revision	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 1. Revising addition of single digits to 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	<ol style="list-style-type: none"> 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	<ol style="list-style-type: none"> 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 $2 \times 4 = 8$
6. Fractions	<ol style="list-style-type: none"> 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	Activities
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	Activities
9. Making and reading block graphs	1.Making block graphs to show information about the class such as the children's favourite fruits 2.Making horizontal and vertical block graphs 3.Reading information from block graphs

Syllabus

Standard Two	
Measurement	
Topics	Activities
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 of 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 of 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 of objects using non-standard units such as seeds and shells on a simple scale balance
16. Standard units of 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	Activities
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 of the week and the months of year
Money	
Topics	Activities
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	Activities
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, one hundred less than a given number
3. Numbers to 9999	1. Reading, writing and counting numbers up to 9999 2. Recognising the place 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 two- and three-digit numbers with regrouping
5. Mental addition	1. Mentally adding one- and two-digit numbers 2. Recognising how to add the digits that make ten when mentally adding two or more numbers 3. Mentally adding numbers in tens, hundreds or thousands eg $30+40$; $50+60$; $200+700$; $800+600$
6. Subtraction	1. Revising subtraction without trading 2. Subtracting two-digit numbers from three-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 tens 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 $4 \times 2 = 8$ 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	Activities
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 until there are none left 2. Sharing objects by making groups, eg putting 14 shells into groups of 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 $\frac{1}{2}$ means one part out of two equal parts and $\frac{1}{4}$ means 1 part out of four equal parts 2. Placing fractions on a number line 3. Using a number line to show $1\frac{1}{2}$, $2\frac{1}{2}$ etc
15. Developing fractions	1. Recognising fractions on a chart, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{10}$ 2. Knowing the relative sizes of fractions, for example that $\frac{1}{2}$ is bigger than $\frac{1}{4}$
Shape	
Topics	Activities
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 have square corners; triangles, rectangles, squares 4. Making patterns with square corners

Syllabus

Standard Three	
Graphs	
Topics	Activities
18. Scales	1. Reading scales, eg thermometer, ruler, spring balance
19. Making graphs	1. Recording information using a tally chart 2. Drawing bar charts.
Measurement	
Topics	Activities
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	Activities
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	Activities
26. Computation of money	1. Adding and subtracting prices 2. Calculating change 3. Expressing amounts in different combinations of coins and notes

Syllabus

Assessment

Teachers should continually assess the progress of the children and base 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 on to a new objective in each topic.

Assessments can be made during lessons by observation of the children as they perform classroom tasks.

Suggested timetable for Standards 1 - 3

There should be just one daily mathematics lesson of about 35 to 40 minutes, depending on local circumstances and the age 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 (morning talk, poems, rhymes, shared reading, guided reading, oral activities, handwriting)				
10.15 - 10.45	Break				
10.45 - 11.45	Language activities (morning talk, poems, rhymes, shared reading, guided reading, oral activities, handwriting)				
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

Recommended teaching materials

The following recommended teaching materials for Standards One, Two and Three are produced by the Curriculum Development Centre.

Primary Mathematics In-service Course.

This course book forms part of the in-service 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, Two and Three.

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 are provided for Standards One, Two and Three. Also provided are cards, pictures and games. These are designed for the children to practise and consolidate their mathematical skills and knowledge in an active, interesting and relevant 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 Nguzu Mathematics

Teacher's Guide



Standard 3

Unit 1

Number Topics 1 & 2: Numbers up to 999

Aim:

to develop further understanding of the formation, order and sequence of numbers up to 999

Sequence of objectives:

1. (Topic 1 activity 1) to teach reading, writing and counting of numbers up to 999
2. (Topic 1 activity 2) to practise recognising the place value of digits
3. (Topic 1 activity 3) to practise counting in hundreds and tens
4. (Topic 1 activity 4) to place numbers on a number line
5. (Topic 2 activity 1) to practise putting numbers in order
6. (Topic 2 activity 2) to make and order different numbers with three digits
7. (Topic 2 activity 3) to find ten more, one hundred more, ten less, one hundred less than a given number.

This unit helps the children to revise and explore the tens number system up to 999, through activity.

Practical materials must be used to help develop the children's understanding.

T₁

Materials:

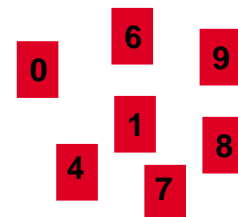
place value chart,
number cards 0-9 (use
sand-backed cards on
a cloth board if you
can)

Ask the children to sit together on a mat at the front of the classroom so that they can all see.

Pick any three cards and put them on the place value chart.

Ask questions about the number shown.

H	T	O
2	5	3



Ask,

"What is the number shown?"

How many ones are there?

How many tens?

How many hundreds?

What does the 3 show?

What does the 5 show?

What does the 2 show?"

"Two hundred and fifty three.

Three ones.

Five tens.

Two hundreds.

Ones.

Tens.

Hundreds."

Repeat with different numbers, such as,

3 2 8

4 7 0

9 0 1



Let the children work in groups of four. Give each group a place value chart and a set of cards.

Ask the children to pick the correct cards and put them on the place value chart to make the following numbers

"Two hundred and thirty five.

Six hundred and fifty seven.

One hundred and seventy four.

Three hundred and eighty one.

Five hundred and forty.

Nine hundred and three."

Check that each group can make the numbers correctly.

Ask the children to make other numbers.

Ask the children to pick the correct cards and put them on the place value chart to make the following number:

"One hundred, four tens and five ones."

Ask the children to read the number to you.

"One hundred and forty five."

Repeat with different numbers, such as:

"Two hundreds, one ten and seven ones.

Five hundreds, six tens and two ones.

Eight hundreds, four tens and seven ones

Four hundreds and two tens.

Six hundreds and eight tens.

Three hundreds and four ones.

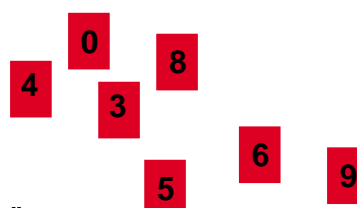
Seven hundreds and nine ones."

Materials:

a place value chart for each group, a set of number cards 0-9 for each group

"Two hundreds, one ten and seven ones."

H	T	O
2	1	7



"Two hundred and seventeen."



Can all the children read, write and count numbers up to 999?

Unit 1

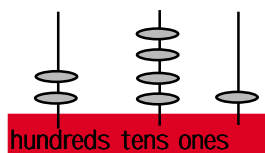
T₂

Materials:
an abacus, children's
exercise books

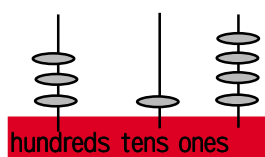
Let the children sit at their desks but make sure they can all see the abacus.

Make different numbers on the abacus.

Ask the children to name the numbers.



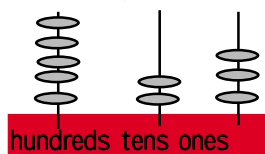
"Two hundred and forty one."



"Three hundred and fourteen."

Make some more numbers.

This time ask the children to write the numbers in their books in words and figures.



523

Five hundred and twenty three.

C₂

Materials:
children's resource
book, pages 2-3

Ask the children to complete the activities in their resource book, pages 2 and 3.

Monitor the children as they work and give help to those who need it.

Unit 1. Number

Talk about the questions with your teacher before you start writing. Write the answers in your exercise book.

Example. 1. 352 How many ones? 1. 2 ones

13. 13. 150 How many tens? 13. 5 tens

How many ones?

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

Number. Unit 1

Write these numbers in words and figures.

Example. 1. 200 = Two hundred

2. 350 = Three hundred and fifty

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11.



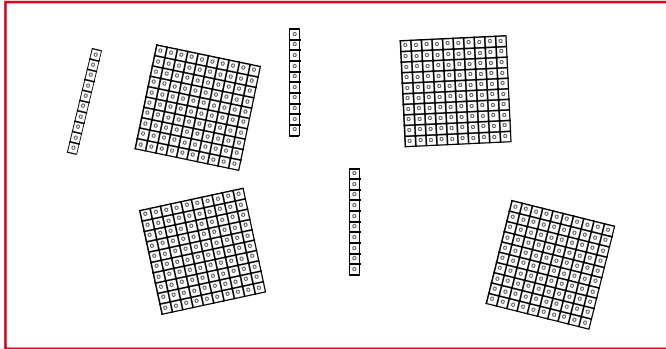
Can all the children recognise the value of digits placed in the hundreds, tens and ones positions?

T₃

Let the children sit together on mats at the front of the classroom so that they can all see.

Place a collection of number blocks on the mat.

Ask the children to guess what total the number blocks show.



Count the number blocks.

Count the hundreds first, then the tens.

Count,

"One, two, three, four hundred.

Ten, twenty, thirty.

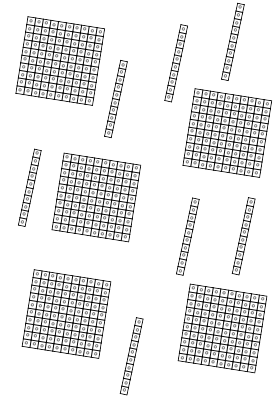
The number is four hundred and thirty."

Repeat with different numbers.

Ask the children to take turns counting different numbers up to 990.

Materials:

some 100s and 10s number blocks



C₃

Ask the children to complete the activities in their resource book. They should write the answers neatly in their exercise books.

Materials:

children's resource book, page 4

Unit 1. Number

Count the blocks and write the totals in numbers and words.

Example 1.

1. 354 = Three hundred and fifty four

1.

2.



Can all the children count in hundreds and tens?

Unit 1

T₄

Materials:
blackboard

Draw a number line on the blackboard. Fill in some numbers.



Ask the children to fill in the missing numbers.

Ask children to show the approximate position of numbers such as 250, 310, 490, 650, etc.

Draw a number line from 150 to 250.



Draw a dot on the number line. Ask the children to count in tens from 150 to the dot.

"One hundred fifty, one hundred and sixty, one hundred and seventy, one hundred and eighty, one hundred and ninety."

Repeat with different numbers.

Ask the children to show the approximate position of numbers such as 161, 173, 194, 201, etc.

C₄

Materials:
children's resource
book, page 5

Ask the children to
complete the activities
in their resource
book, page 5.

Number. Unit 1

Copy these number patterns.
Fill in the missing numbers.

Example.
1. 120 130 140 150 160

1. 120 130 140 190

2. 127 128 129 134

3. 97 98 99 104

4. 295 296 297 302

Write the number shown by each letter on the number line below.
Then write each number in order, smallest first.

5. A = 6. B = 7. C =



Can all the children put numbers up to 999 in the correct place on the number line?

T₅

Prepare about 3 or 4 sets of cards before the lesson.
There are 3 cards in a set. Write the same 3 digits on each card to make different numbers. For example,

digits 3, 5 & 2.

3 5 2

2 3 5

5 3 2

Let the children sit together on mats at the front of the classroom.
Show one set of 3 cards.

3 1 5

5 1 3

1 3 5

Ask,

"Which number is biggest?

Which is smallest?

Which has most hundreds?

Which has least hundreds?"

"Five hundred and thirteen.

One hundred and thirty five.

Five hundred and thirteen.

One hundred and thirty five."

Let the children arrange the 3 cards in order, smallest first.

1 3 5

3 1 5

5 1 3

Repeat with the other sets of cards.

Materials:
card from the store to make some sets of number cards

3 1 5

5 1 3

1 3 5

4 1 6

6 1 4

1 4 6

C₅

The children complete the exercises on page 6 of their resource book.

Check that each child can answer all the questions correctly.
Use a number line to help those children who find the activities difficult.

Materials:
children's resource book, page 6

Unit 1. Number

Talk about the activities with your teacher before you start. Write the answers in your exercise book.

Example. 1. $\begin{array}{ccc} 124 & & 412 \\ & 214 & \\ 142 & & 421 \end{array}$

1. Four hundred and twenty one

Find the biggest number in each box. Write it in words.

1. $\begin{array}{ccc} 124 & & 412 \\ & 214 & \\ 142 & & 421 \end{array}$

2. $\begin{array}{ccc} 235 & & 325 \\ & 253 & \\ 532 & & 352 \end{array}$

3. $\begin{array}{ccc} 394 & & 934 \\ & 943 & \\ 349 & & 439 \end{array}$

?

Can all the children put three numbers up to 999 in order, smallest first?

Unit 1

T₆

Materials:
one set of number
cards 0-9 for each
group

The children work in groups of 4.
Give each group a set of number cards, 0 - 9.
Call out three digits, for example **3, 5 and 2**.

Ask the children to arrange their cards to make the largest number they can. The number is **532**. Ask,
*"How many hundreds are there? How many tens?
How many ones?"*

Now ask the groups to make the smallest number from **3, 5 and 2**.
The number is **235**. Ask,
*"How many hundreds are there? How many tens?
How many ones?"*

Repeat with different sets of 3 digits to make different numbers .
Make the activity into a game. The first group to make the biggest number wins.

C₆

Materials:
Make a Number game
cards, one set of
number cards 0-9 for
each child

The children play in groups of four.
Each child mixes their number cards and puts them face down on the desk.



They pick one card each.
They have to decide where to put the card so that they can make the largest possible number.

For example, if they pick a 5 they must decide if it is best to put it in the hundreds, tens or ones.

They are not allowed to move the card when they have placed it.

They pick a second card and then a third.

The player with the biggest number wins.

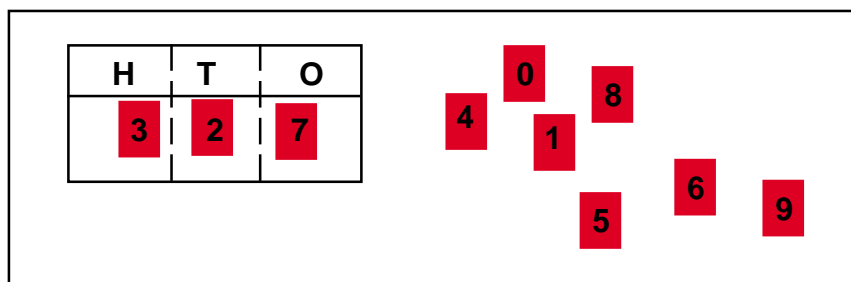


Can all the children make different numbers with three digits and place them in order, smallest first?

T₇

Let the children sit together on mats at the front of the classroom so that they can all see.

Make a number on the place value chart using any 3 number cards, for example,



Materials:
place value chart, 2 or
3 sets of number
cards 0 - 9

Ask the children to read the number.

Ask,

"How many hundreds?" **"Three."**

"How many tens?" **"Two."**

"How many ones?" **"Seven."**

"What is the number?" **"Three hundred and twenty seven."**

Ask the children to use the remaining number cards to,

"Change the number to make it ten more.

Change the number to make it ten less.

Make the number one hundred more.

Make the number one hundred less."

Repeat with different numbers, such as **453, 675, 938**, etc.

Ask the children to,

" Make one hundred less than 132, 165, 172.

Make ten less than 316, 400, 612.

Make ten more than 190, 296, 394." etc.

Materials:
children's resource
book, page 7

C₇

Ask the children to complete the activities in their resource book, page 7.

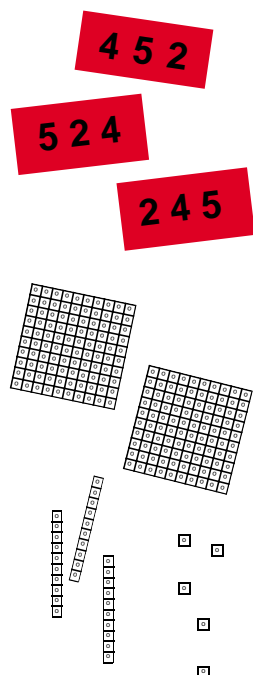
Read the activities with the children before they begin.

Make sure all the children understand what to do.



Can all the children find ten more, ten less less, one hundred more and one hundred less than any given number up to 999?

Materials:
sets of cards from
activity T5, number
blocks



Let the children sit together on mats at the front of the classroom so that they can all see and join in with the activity.

4 5 2

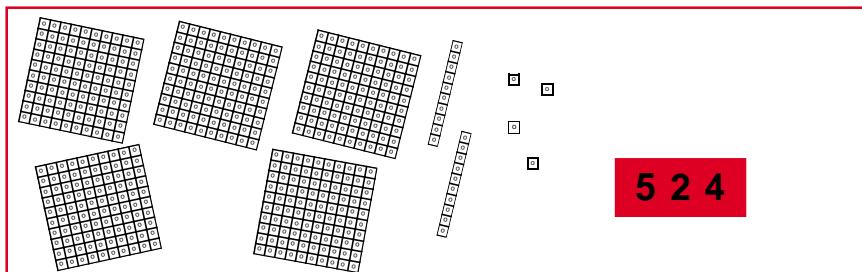
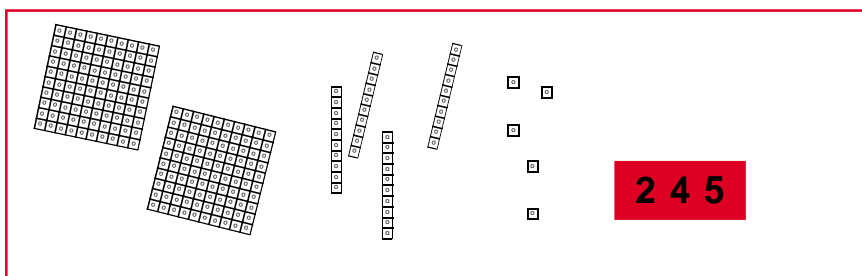
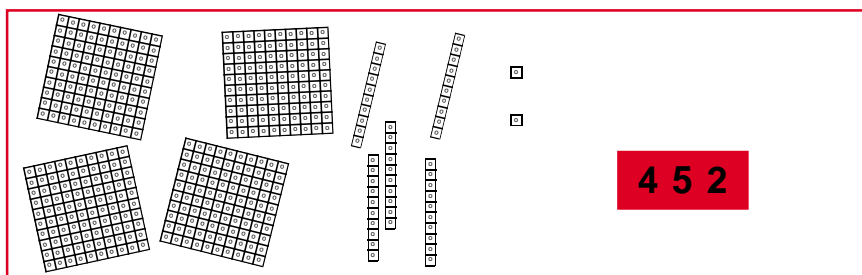
2 4 5

5 2 4

Show a set of three cards.

Ask the children to name each number.

Ask them to make each number using number blocks.



Ask,
"Which number has most hundreds?
Which is biggest?
Which number has least hundreds?
Which is smallest?"

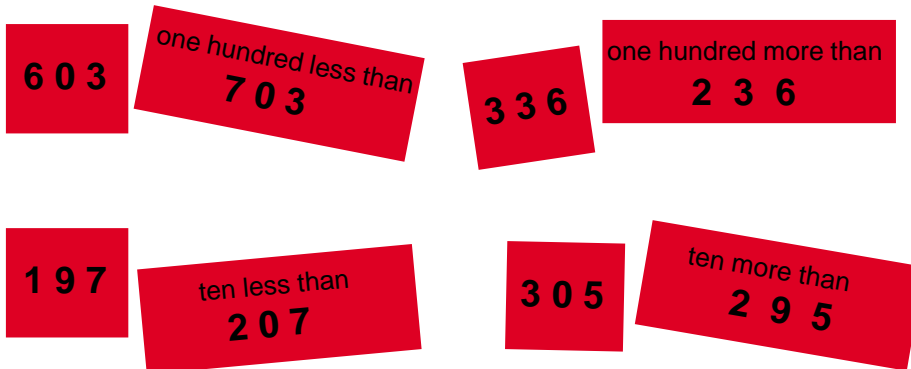
Ask the children to place the numbers in order, smallest first.
Repeat with different numbers.

Materials:
Standard Two
materials

Revise and repeat some of the number games and activities from Standard Two, Unit 3.

Extra activities**Extension**

Make some sets of memory cards. Use card from empty boxes from the store. The memory cards must be in matching pairs. For example,



Make about twenty cards for each set.

Let the children play the memory game in groups of 3 or 4.

Materials:
one set of memory cards for each group

Let the children work in groups of two.
Let the children investigate numbers.

Give each group one set of number cards, 0 - 9.
Ask each group to pick any three numbers, such as 7, 3 and 4.

Ask each group to make as many different three digit numbers as they can, using 7, 3 and 4.

Ask them to write the numbers.
How many different numbers can be made?

Ask them to arrange the numbers in order, smallest first.

Materials:
one set of number cards, 0-9, for each group

Let the children play the Make a Number game.

Materials:
Make a Number game cards, one set of number cards 0-9 for each child

Shape Topic 16: Symmetry

Aim:

to develop children's understanding of lines of symmetry and symmetrical patterns, including those involving rotational symmetry

Sequence of objectives:

1. to find lines of symmetry in shapes and patterns
2. to recognise and make patterns which are symmetrical
3. to recognise shapes which have rotational symmetry.

In this topic the children develop their understanding of symmetry in practical activities and by investigating shapes and patterns. The children begin to learn about rotational symmetry by turning shapes to see how many times they fit into the same space.

T₁

Materials:

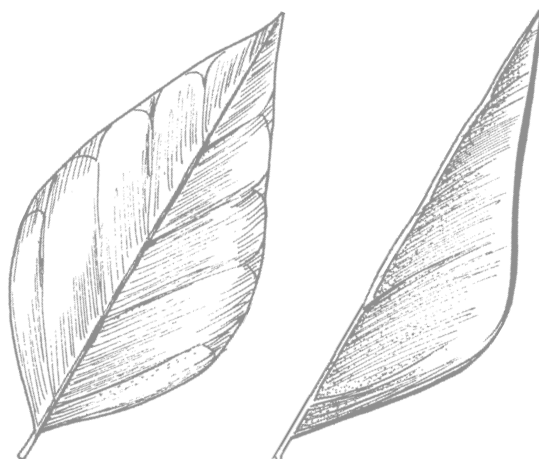
a selection of leaves,
blackboard, chalk

Let the children sit together on mats at the front of the classroom so that they can all see.

Show the children some large leaves.

Ask the children to tell you how they could fold the leaves so that one half will fit exactly on top of the other.

Demonstrate this with several different leaves and let children try this for themselves.



Draw an outline of a leaf on the blackboard. Draw a line along the middle of the leaf and tell the children that this is called the '*line of symmetry*'.

Draw other leaves on the blackboard and ask children to mark in the lines of symmetry.



Divide the class into groups of 4 or 5.

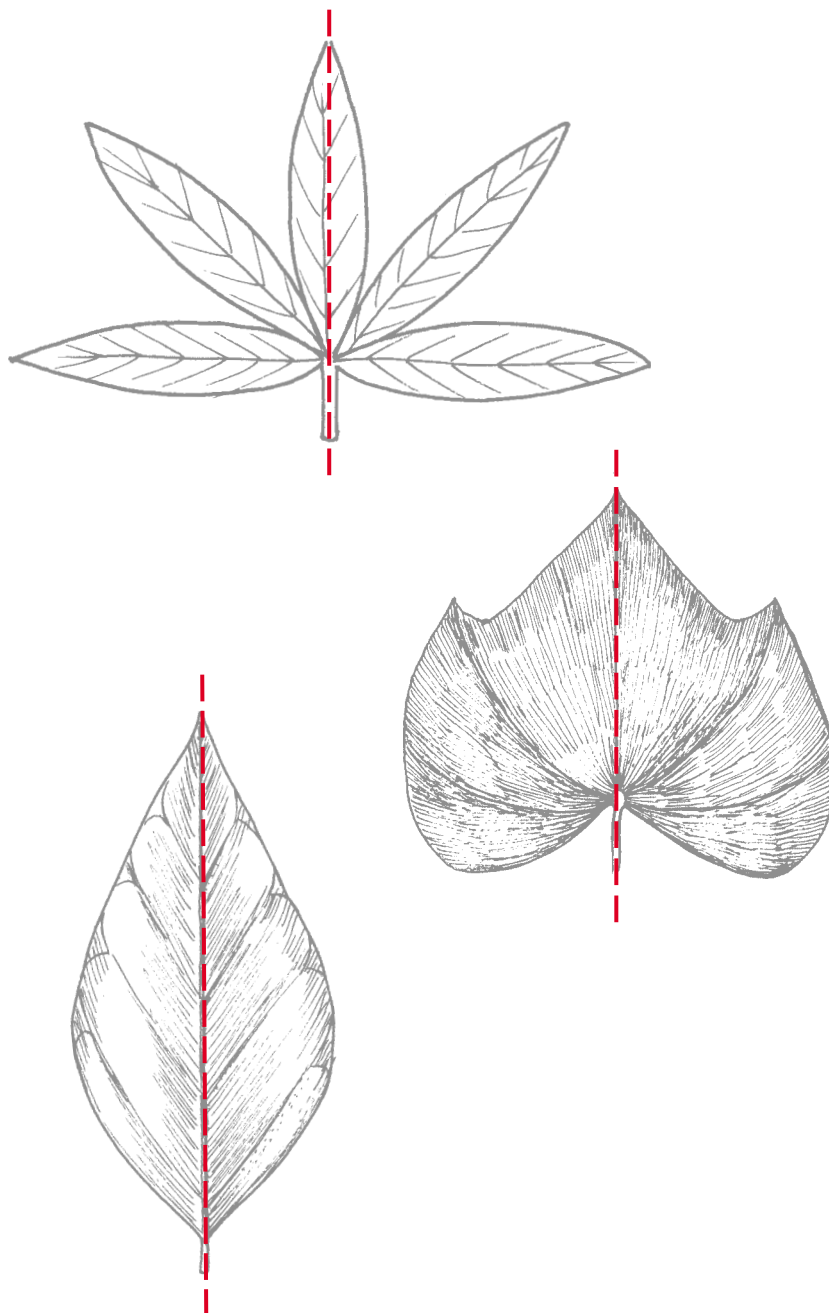
Give each group a selection of leaves. Let them carefully fold each leaf so that one half fits on top of the other.

Ask the children to draw round some of the leaves and mark the lines of symmetry carefully on their drawings.

Use the children's work to make a display.

Materials:

a selection of leaves,
paper, pencils



T₁

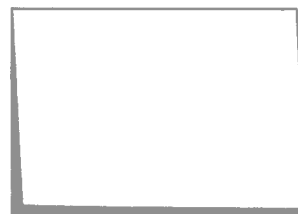
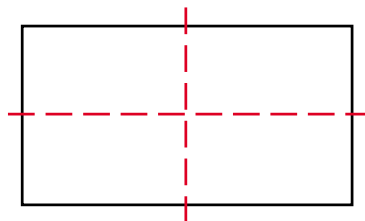
Materials:
A4 size paper,
blackboard, chalk

Hold up a piece of A4 size paper for all the class to see.

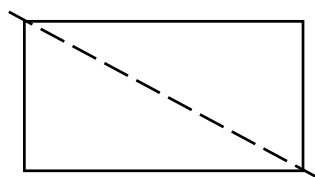
Ask the children,
"How can I fold this so that the two parts will match exactly?"

Ask children to come to the front and show how this can be done.

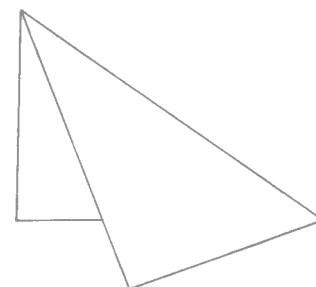
Show the children the lines of symmetry on the blackboard.



Draw another rectangle with a diagonal line from corner to corner. Ask the children if they think this is a line of symmetry. Fold a piece of paper along this line to show that the two parts will not match, so the diagonal line is not a line of symmetry.



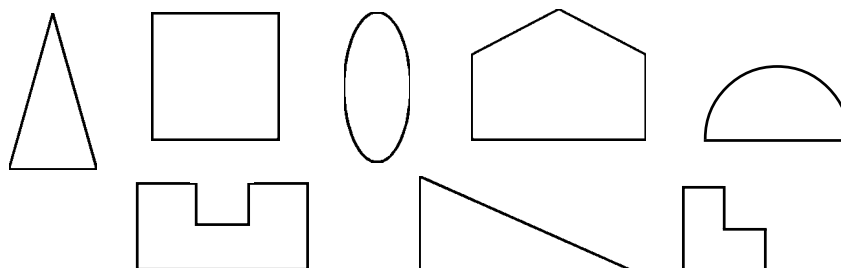
A rectangle has 2 lines of symmetry.



C₁

Materials:
paper, scissors

Draw a selection of different shapes on the blackboard; e.g.



Divide the class into groups of 4 or 5. Give each group a pair of scissors and some paper. Ask each group to copy the shapes as accurately as they can and cut them out.

Let them find lines of symmetry by folding the shapes.

When the groups have had time to work on each of the shapes, ask questions such as,

"Which shape has the most lines of symmetry?"

"Which shape has one line of symmetry?"

"Are there any shapes with no lines of symmetry?" etc.

T₁

Write some of the capital letters of the alphabet on the blackboard:



Ask the children to help you find the lines of symmetry. Choose different children to come to the blackboard and draw the lines of symmetry for each letter.

Materials:
blackboard, chalk

C₁

Ask the children to work in twos. Let them carefully write the capital letters of the alphabet and find the lines of symmetry. The children can use a mirror to help them find the line of symmetry for each letter.



Materials:
paper, pencils,
rulers, square or
rectangular mirrors
(you can make a mirror
by pasting the shiny
paper from the inside
of a Curlies pack to a
piece of card)

When the children have had time to look at all the letters, ask questions such as,

"Which letter has the most lines of symmetry?"

"Which letters have no lines of symmetry?" etc.

Remind the children of the word 'symmetrical'. If a letter has one or more lines of symmetry we can say it is 'symmetrical'.

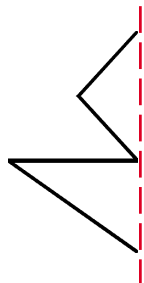


Can all the children find lines of symmetry in shapes?

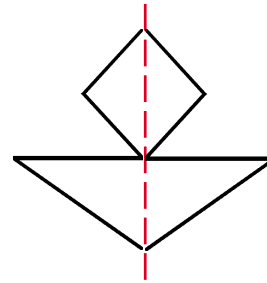
T₂

Materials:
blackboard, chalk

Explain to the children that you are going to draw half a symmetrical shape on the blackboard, for example,



Let children come to the blackboard and try to complete the other half of the shape, so that the whole shape is symmetrical:

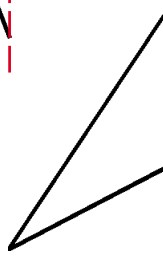
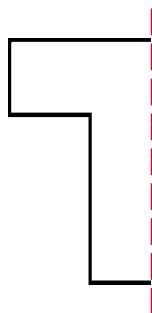


Repeat this with other shapes.

C₂

Materials:
rulers, mirrors

Draw some halves of shapes on the blackboard, for example:



Ask the children to copy the shapes as accurately as they can into their books and then complete the other half of the shape so that the whole shape is symmetrical.

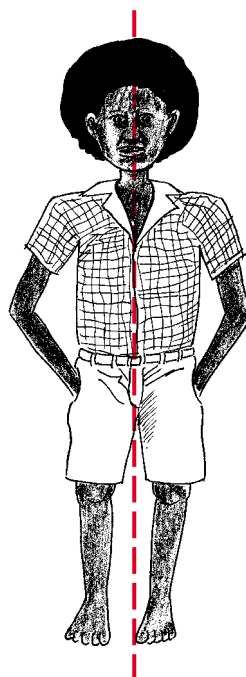
Let the children use mirrors to check their work.

T₂

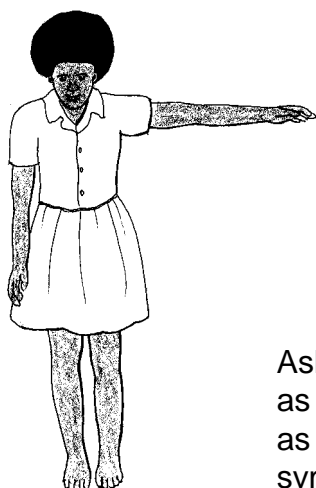
Ask one of the children to come and stand at the front of the class, facing the other children.

Ask the class to tell you where the child's line of symmetry would be, i.e.

From the top of his head to between his feet.



Ask other children to come to the front of the class, but this time, they must stand so that they do not have a line of symmetry, for example:



Ask the children to think of as many different positions as they can which are not symmetrical.

C₂

Ask the children to work in twos.

Give the children pieces of paper and ask them to draw one half of a face, with a line of symmetry.



The children then exchange their drawings. They must try to draw the other half of the picture so that the whole face is symmetrical.

Use the children's pictures to make a display.

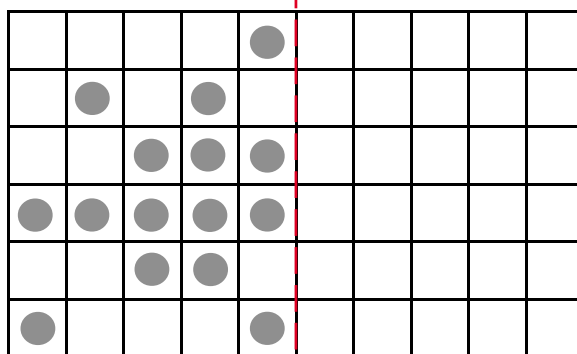
Materials:
paper, pencils, rulers

Unit 2

T₂

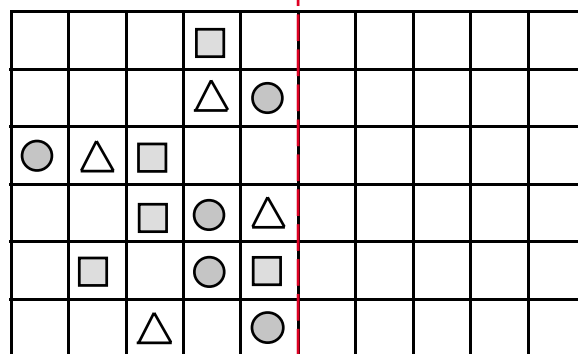
Materials:
blackboard, chalk

Draw a pattern like this on the blackboard:



Ask children to take turns to come to the blackboard and draw a circle on the other side of the line of symmetry, so that when the pattern is complete it is symmetrical.

Repeat this activity, but this time draw a pattern including different shapes. Again ask children to come to the blackboard in turn to help complete a symmetrical pattern.



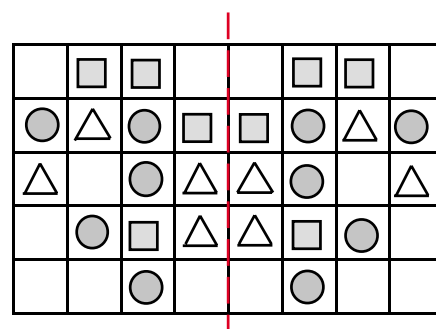
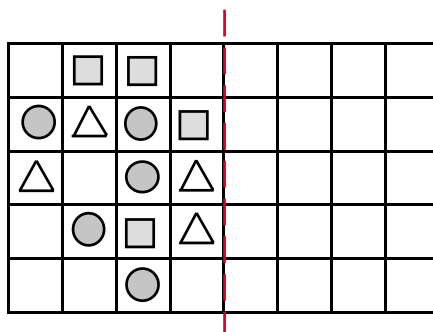
C₂

Materials:
paper, pencils, rulers

Let the children work in twos.

Ask each child to draw half of a symmetrical pattern using circles, squares and triangles.

The children exchange their patterns and then complete them so that the whole pattern is symmetrical.

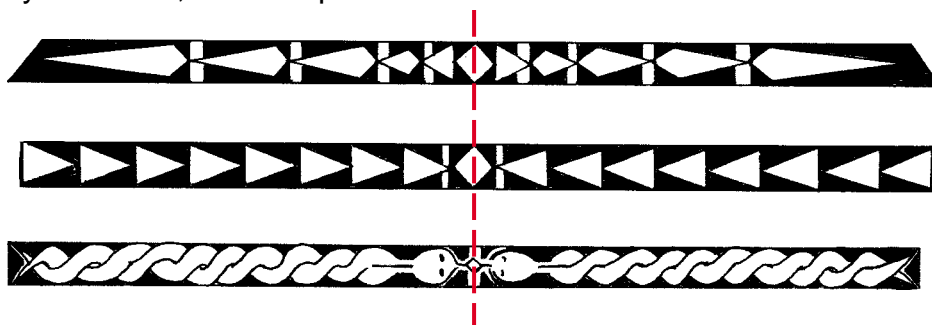


T₂

Make a collection of objects which have symmetrical patterns, such as mats, tapa cloths, patterned calico, baskets, carvings, etc. Ask the children to look at the patterns and describe what they can see. Encourage them to look for lines of symmetry in the patterns.



Ask the children to look at Nguzu Nguzu story books such as *The Canoe Race* and *Zaleseko's Secret*. Let them look at the borders around the pictures and try to find patterns which are symmetrical, for example:

C₂

Ask the children to design their own symmetrical borders, like the ones in *The Canoe Race* and *Zaleseko's Secret*. Let them begin by drawing a line of symmetry.

Let the children use their work as a border for some of their writing in English and display the finished work in the classroom.

Materials:
objects with symmetrical patterns such as mats, tapa cloths, patterned calico, baskets, etc. Nguzu Nguzu story books such as *The Canoe Race* and *Zaleseko's Secret*

Materials:
paper, pencils, rulers, Nguzu Nguzu story books such as *The Canoe Race* and *Zaleseko's Secret*



Can all the children recognise and make patterns which are symmetrical?

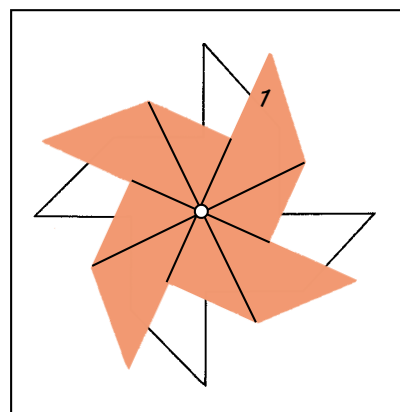
T₃

Materials:

card, paper, scissors,
pin or paper fastener

Make a simple windmill from a piece of card. Mark one arm of the windmill with a number 1. Fix it onto another piece of card or paper with a pin or paper fastener in the centre and draw round the outline of the windmill.

Let the children sit together on mats at the front of the classroom so that they can all see.
Slowly turn the windmill and ask the children to count each time the windmill fits into it's outline, until the number 1 is back to where it started. Ask, *'How many times did the windmill fit?'*
Explain that the windmill shape looks the same in four different places.

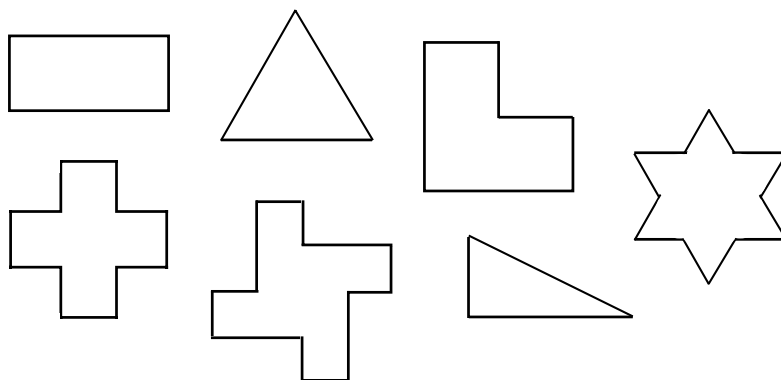


C₃

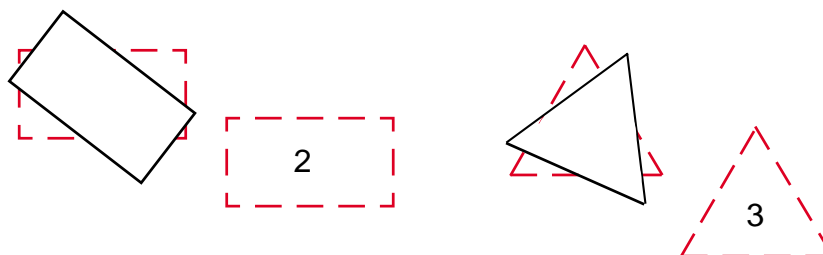
Materials:

card to make cut-out
shapes, paper, pencils

Prepare a set of cut-out shapes for the children to use in groups of 4 or 5.



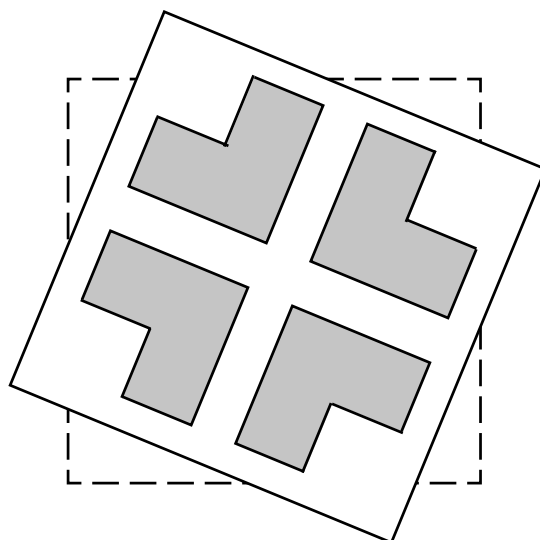
Ask the children to use one shape at a time.
Let them draw round the shape and then carefully turn the shape to see how many times it fits into it's outline.
Ask the children to record this number each time:



Ask the children questions such as,
"Which shape fitted into its outline the most times?
Which shapes only fitted once?" etc.

T₃

Draw a pattern of shapes on a large piece of card or paper:
Ask the children to tell you how many times the pattern of shapes will look the same as you turn it around.

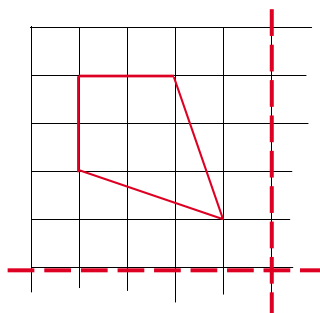


Turn the pattern slowly around and stop each time you have turned it 90° . Ask the children to count each time so that they can see that the pattern looks the same in four different positions.

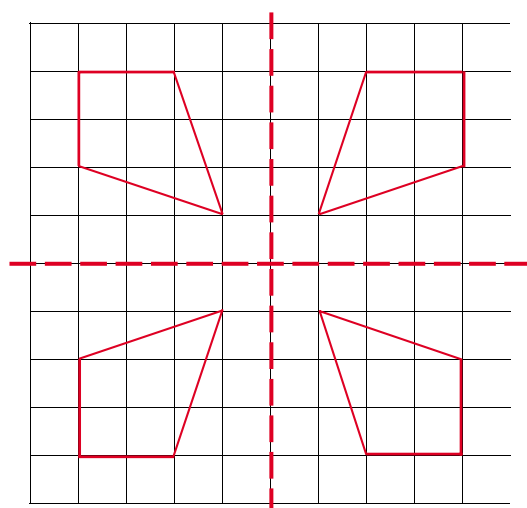
Materials:
a large piece of paper or card

C₃

Let the children use squared paper from an exercise book to make a square grid. Ask the children to divide their grid into 4 equal parts and carefully draw a shape in one corner of the grid using the squares as a guide.



Now ask the children to repeat the same shape in the other 3 sections of the grid, so that they have a pattern which has rotational symmetry.



Materials:
squared paper, pencils, rulers, coloured pencils or crayons

Let the children colour their patterns.
Use their work to make a display.

T₃

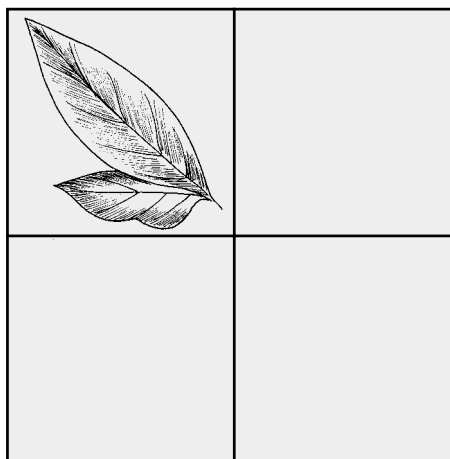
Materials:
paper, leaves

Ask the children to make a collection of different leaves.

Let the children sit on mats at the front of the classroom so that they can all see.

Show the children how to fold a square piece of paper carefully into four. In one of the four sections, trace a simple leaf pattern.

Show the children how to repeat this pattern in the other sections of the paper to make a leaf pattern which has rotational symmetry.



C₃

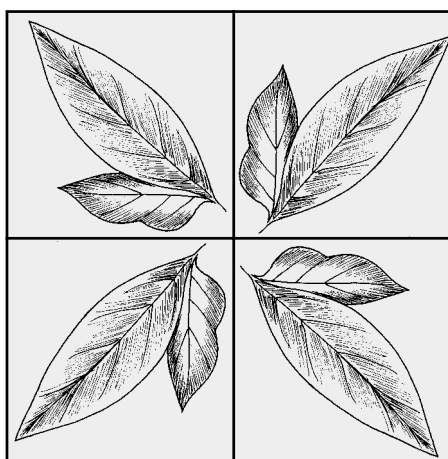
Materials:
paper, leaves, coloured
pencils or crayons

Divide the children into groups of 4 or 5.

Give each group square pieces of paper and some leaves to use.

Let the children fold their paper carefully to make four equal sections.

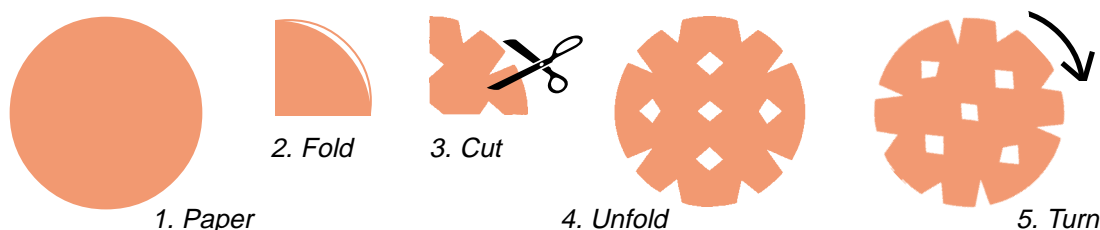
Ask the children to choose 2 or 3 leaves and carefully trace or draw round them in each section of the paper to make a pattern with rotational symmetry. Let the children colour their patterns and use their work to make a display.



Extra activities Support

Let the children work in small groups. Give each group some cut-out paper circles and scissors to use. Ask the children to fold the paper in half, and then in half again. Let the children cut the paper to make a simple pattern. When they unfold their piece of paper, ask them to slowly turn their pattern and see if it looks the same in different positions.

Materials:
cut-out paper circles,
scissors



Extra activities Extension

Write some capital letters on the blackboard. Draw a line of symmetry and show the children what the letters look like when they are upside down, or '*reflected*' in the '*mirror line*' or *line of symmetry*.

Materials:
blackboard, chalk
paper, pencils, rulers
coloured pencils or
crayons



Write some more capital letters and ask children to come and draw the '*reflected*' letters.

Repeat this activity, but this time use a vertical line of symmetry:



Ask the children to write their names using capital letters, and then write the reflected letters underneath. Let them use a mirror to help them if they need to.

When the children have practised this and can write their names in '*mirror writing*', let them repeat the activity, but this time using a vertical line of symmetry.

Let the children colour the letters of their name. Use their work to make a display.



Unit 3

Number Topic 3: Numbers up to 9999

Aim:

to teach the reading, writing, counting, ordering and place value of numbers up to 9999

Sequence of objectives:

1. to teach the children to read, write and count numbers up to 9999
2. to teach the children to recognise the place value of digits in any 4 digit number
3. to practise putting numbers in order on a number line up to 9999
4. to investigate making the biggest number using any four digits.

It is very important that number blocks, place value charts and number expanders are used to give children a practical demonstration of numbers up to 9999 in this unit.

T₁

Materials:

number blocks,
place value chart

Begin by revising the place value of numbers up to 999.

Place six ones blocks on a place value chart in the ones place.

Ask what number is shown.

Place nine ones. Ask what happens if you add one more.

Place six tens number blocks in the tens place.

Ask what number is shown.

Place nine tens. Ask what happens if you add one more ten.

Place six hundreds number blocks in the hundreds place.

Ask what number is shown.

Place nine hundreds. Ask what will happen if you add one more hundred.

Some children may know that the number after 999 is 1000.

Explain that to show 1000 on the place value chart there has to be a new column for thousands.



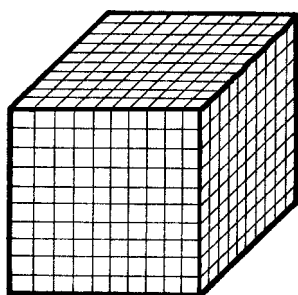
Explain that 1 thousand is made up of ten hundreds.

Make a variety of numbers using the number blocks and place value table. Ask the children to name the numbers.

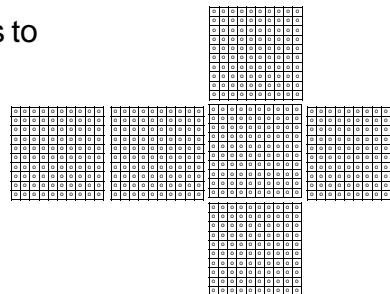
Call out some numbers, such as,
"One thousand four hundred and twenty six."

Ask the children to make the number on the place value chart.
 Repeat with different numbers.

Materials:
 place value chart,
 number blocks
 including one
 thousand



Make a thousand block using
 card from the store.
 Draw round six hundred blocks to
 make a net of the block.
 Fold the net and stick it to
 make a cube.



Make a place value table from a flour bag, rice bag or
 piece of cotton. Stick sand to the back of the number
 blocks so that they stick to the place value chart.

| thousands | hundreds | tens | ones |
|-----------|----------|------|------|
| | | | |
| 1 | 2 | 4 | 6 |

Unit 3

T₁

Materials:
place value chart,
number blocks,
number cards 0-9

Use the number blocks to make a variety of numbers on the place value chart, such as 4253.

Ask the children to pick a number card and place it under each set of blocks.

Ask,

"How many are in the thousands?"

"Four thousands."

"How many are in the hundreds?"

"Two hundreds."

"How many are in the tens?"

"Five tens."

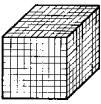
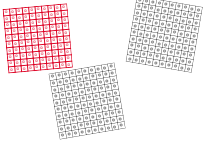
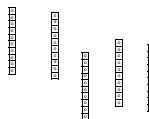

"How many are in the ones?"

"Three ones."

"What is the number?"

"Four thousand two hundred and fifty three."

Repeat with different numbers.

| thousands | hundreds | tens | ones |
|--|--|---|--|
|  |  |  |  |
| 1 | 3 | 5 | 4 |

C₁

Materials:
children's resource
book page 8


Discuss the activities
in the children's
resource book,
page 8.

Ask the children to
write the answers in
their exercise books.

Unit 3. Number

Example.


1. thousands hundreds tens ones



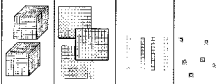
1,134
One thousand, one hundred and thirty four

Write the number shown on each place value chart.


1. thousands hundreds tens ones



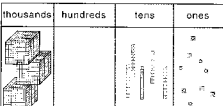
2. thousands hundreds tens ones



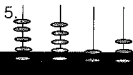
3. thousands hundreds tens ones

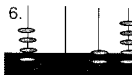


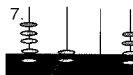
4. thousands hundreds tens ones



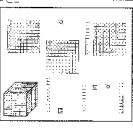
Write the number shown on each abacus.

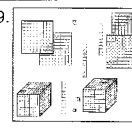
5. 

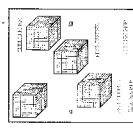
6. 

7. 

Write the number shown in each box.

8. 

9. 

10. 

Write the number which comes after these numbers.

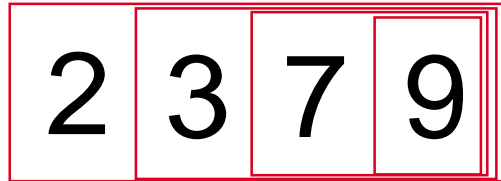
11. 1492 12. 6000 13. 5203 14. 2019 15. 3599



Can all the children read, write and count numbers up to 9999?

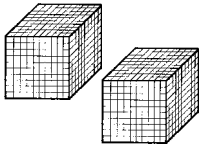
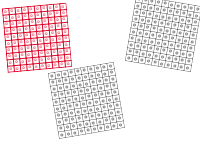
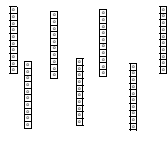
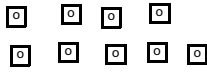
T₂

Let the children sit together so that they can all see. Use four Number Maker cards to make a number such as,



Hold the cards together with an elastic band or paper clip.

Ask the children to make the number on the place value chart using number blocks and cards.

| <i>thousands</i> | <i>hundreds</i> | <i>tens</i> | <i>ones</i> |
|---|---|---|--|
|  |  |  |  |
| 2 | 3 | 7 | 9 |

Ask,

"What does the 9 mean?"

"What does the 7 mean?"

"What does the 3 mean?"

"What does the 2 mean?"

"What is the number?"

"Nine ones."

"Seven tens."

"Three hundreds."

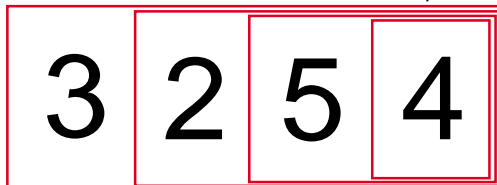
"Two thousands."

"Two thousand, three hundred and seventy nine."

Open up the Number Maker cards and show that 2379 is made from, 2000, 300, 70 and 9.

C₂

Show a number on the Number Maker cards, such as



Ask each group to make the number on their place value chart. Ask,

"How many thousands are there?"

How many hundreds?

How many tens?

How many ones?"

Open the Number Maker and show the thousands, hundreds, tens and ones.

Materials:

place value chart,
number blocks, number
cards 0-9,
Number Maker cards

Materials:

Number Maker cards,
one place value chart,
number blocks and
number cards 0-9 for
each group

T₂

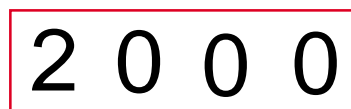
Materials:
Number Maker cards

Make a number from the Number Maker cards. Ask the children to read the number. For example,



"Two thousand one hundred and thirty five."

Ask,
"How many thousands?
How many hundreds?
How many tens?
How many ones?"



Show the Number Maker cards.

Write, $2135 = 2000 + 100 + 30 + 5$

C₂

Materials:
children's resource
books, page 9,
Number Maker cards

Talk about the
activities in the
children's
resource book,
page 9, before
they start
writing. Help the
children with the
activities.

Number. Unit 3

Example.

1. $3214 = 3000 + 200 + 10 + 4$

Copy the Number Maker cards. Fill in the missing numbers.

2. $2356 = 2000 + 300 + \square + 6$

3. $5429 = \square + \square + 20 + 9$

4. $3065 = 3000 + \square + 60 + \square$

5. $6401 = \square + 400 + \square + 1$

6. $7008 = \square + \square + \square + 8$

Write the numbers shown in the boxes.

7. $\begin{matrix} 3000 & 100 \\ 20 & 5 \end{matrix}$

8. $\begin{matrix} 6 & 4000 \\ 30 & 700 \end{matrix}$

9. $\begin{matrix} 50 & 300 & 1 \\ & & 5000 \end{matrix}$

10. $\begin{matrix} 40 & 9 \\ 8000 & 500 \end{matrix}$

11. $\begin{matrix} 3000 & 300 \\ 60 & 6 \end{matrix}$

12. $\begin{matrix} 60 \\ 4000 & 200 \end{matrix}$

13. $\begin{matrix} 6000 \\ 10 & 500 \end{matrix}$

14. $\begin{matrix} 50 & 9 \\ & 1000 \end{matrix}$

15. $\begin{matrix} 4000 \\ & 8 \end{matrix}$

9

T₂

Use a number expander to show a variety of different numbers.



Ask questions such as,
 "How many thousands are there?
 How many hundreds?
 How many tens?
 How many ones?"

Open the number expander to check if the children are correct.



Repeat with different numbers.

Materials:
 Number expander,
 number cards 0-9

C₂

Talk about the activities
 in the children's
 resource book,
 page 10.

Explain what the
 children have to do.

The children write
 their answers in
 their exercise books.

Unit 3. Number

Talk about the activities
 with your teacher.
 Write the answers in your
 exercise book.

Example.

1. 2,349
 Two thousand three
 hundred and forty nine

Write the number shown on each number expander.

1.

2.

3.

4.

5.

6.

Write the number shown on each abacus.

7.

8.

9.

Write the value of the red numbers.

10. 1352 11. 2137 12. 3542

13. 4301 14. 2980 15. 5027

Materials:
 children's resource
 book, page 10



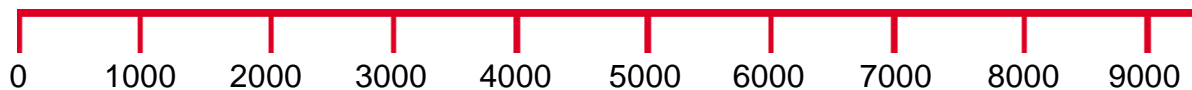
Can all the children state the value of each digit in a four digit number?

Unit 3

T₃

Materials:
blackboard

Draw a number line on the blackboard.
Ask the children to help you mark the number line in thousands.



Now ask children to mark where they think the following numbers should be.

1500 3500 6500 8500

1600 3400 6600 8400

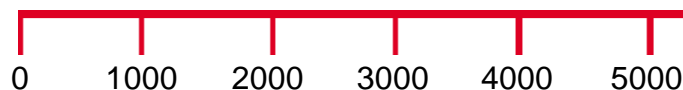
5100 3100 7900 2900

Write each number on the number line.

C₃

Materials:
children's exercise
books

Ask the children to draw a number line in thousands from 0 to 5000.



Ask them to mark on these numbers.

1500 2100 3100 3900 4500

Ask the children to draw a number line from 5000 to 9000.



Ask them to mark these numbers.

5500 6300 7900 8200 8900

T₃

Write a sequence of five numbers on some sets of cards.
Ask the children to help you put the cards in order.

| | | | | | |
|-------|------|------|------|------|------|
| Set 1 | 1527 | 1528 | 1529 | 1530 | 1531 |
| Set 2 | 2398 | 2399 | 2400 | 2401 | 2402 |
| Set 3 | 3997 | 3998 | 3999 | 4000 | 4001 |

Materials:
scrap card from the store

Write some numbers on the blackboard, such as **3569**. Ask,
"What number comes before 3569?"
"What number comes after 3569?"

Repeat with these numbers.

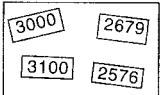
| | | | | | |
|------|------|------|------|------|------|
| 3569 | 3570 | 3571 | 2898 | 2899 | 2900 |
| 3999 | 4000 | 4001 | 2998 | 2999 | 3000 |

C₃

Talk about the activities in the children's resource book page 11. The children write their answers in their exercise book.

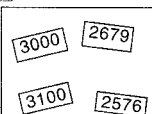
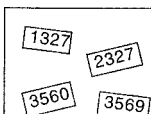
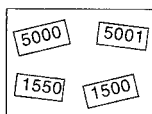
Number. Unit 3

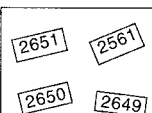
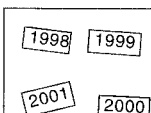
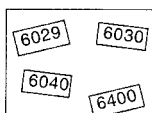
Talk about the activities with your teacher. Write the answers in your exercise book.

Example. 1. 

1. 2576 2679 3000 3100

Write these numbers in order, smallest first.

1.  2.  3. 

4.  5.  6. 

Write the next three numbers.

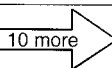
7. 1358 1359 1360

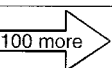
8. 2645 2646 2647

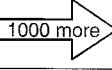
9. 2997 2998 2999

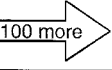
10. 3876 3877 3878

Write the missing numbers.

11. 2527  10 more

12. 4059  100 more

13. 3099  1000 more

14. 4950  100 more

Materials:
children's resource book, page 11



Can all the children place four digit numbers in order on a number line?

Unit 3

T₄

Materials:
place value chart,
number cards 0-9

Put the place value chart on a mat where all the children can see.
Pick 4 number cards, such as



Ask the children to make the biggest number they can with these four digits.

The number is **6531**.

Repeat with other numbers.

Ask the children if they know how to make the biggest number. They should always put the biggest digit in the thousands, next biggest in the hundreds, next biggest in the tens and smallest in the ones.

C₄

Materials:
1 place value chart,
and set of cards 0-9
for each child

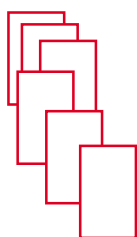
The children play in groups of four.

They mix their cards and put them face down.

They each take turns to pick one card. They put their cards on the place value chart to make the biggest number possible.

They are not allowed to move a card once it is placed.
The winner is the player who has made the biggest number.

Play again. This time make the smallest possible number.



| <i>thousands</i> | <i>hundreds</i> | <i>tens</i> | <i>ones</i> |
|------------------|-----------------|-------------|-------------|
| 5 | 7 | 1 | 2 |
| | | | |



Can all the children make the biggest possible number from four digits?

Extra activities

Support

Play place value bingo with a small group.
The children make a bingo card like this in their book.

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

Pick one card from the set of 0 - 9 number cards and read it out.

The children have to write the number on their bingo card.

| | | | |
|---|--|--|---|
| 3 | | | 3 |
|---|--|--|---|

They have to decide where they will place the 3 in order to make the biggest possible four digit number.

Continue picking and reading numbers.

| | | | |
|---|---|---|--|
| 3 | 7 | 8 | |
| | 2 | | |

| | | | |
|---|---|---|---|
| 8 | 7 | 3 | 2 |
|---|---|---|---|

The child who has made the biggest four digit number wins.

Play again.

Let the children play in small groups by themselves.

Materials:
children's exercise
books,
number cards 0-9

Extra activities

Extension

Ask the children to investigate how many different four digit numbers they can make from the following four digits.

3 5 7 2

How many four digit numbers can they make?

What number is the smallest?

What number is the biggest?

Ask the children to write each number in order, smallest first.

Materials:
children's exercise
books

Unit 4

Measurement topics 20 & 21: Measuring and investigating perimeter

Aim:

to develop children's awareness of the concept of perimeter and to allow them to find out about perimeter by measuring and investigating

Sequence of objectives:

1. (topic 20 activity 1) to teach the meaning of perimeter
2. (topic 20 activity 2) to teach the children to find the perimeter of shapes on a square grid by counting
3. (topic 20 activity 3) to teach the children to calculate perimeters by measuring
4. (topic 21 activity 1) to investigate making shapes with the same perimeter
5. (topic 21 activity 1) to arrange squares into shapes which have different sized perimeters.

This is a practical unit which involves the children in activities which allow them to measure, make and investigate within the topic of perimeter. Through practical activities, the unit shows how the topic of perimeter can be relevant to daily life.

T₁

Materials:
paper, string, rulers

Let the children sit together at the front of the class so that they can all see your demonstration.

Select two children. Ask one child to measure the other's wrist using a strip of paper or piece of string.



Cut the paper or string and lay it flat.

Ask the children to measure it with a ruler.

The length of the string is the same as the distance around the wrist.

Let the children repeat with the distance around the head and waist.



Let the children work in pairs.

The children take turns to measure round each other's wrist, head and waist.

They use strips of paper or string to take the measurements.

They then lay out the paper or string and measure with a ruler.

Let the children record the measurements in centimetres on a table.

Let the children make more measurements, such as around their ankle, neck and shoulders.

Let the children measure round other objects in the classroom and local environment, such as chair legs, house posts and trees.

Materials:
paper, string, glue,
rulers



Round my wrist is
11 centimetres.



Round my head is
25 centimetres



Round my waist is
42 centimetres.



T₁

Materials:
card, magazine,
glue, scissors

Let the children sit together on mats at the front of the classroom so that they can all see.

Choose a photograph or picture from a magazine, such as a Solomon Airlines magazine.

Tell that children that you are going to show them how to make a photograph frame.

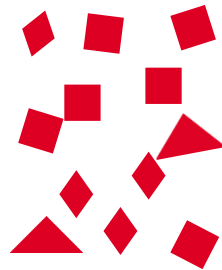
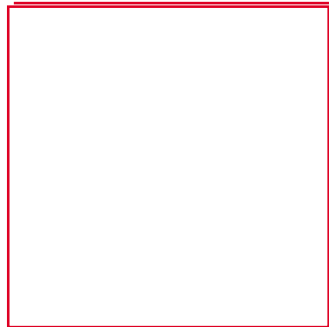
Cut out the picture from the magazine.

Cut a piece of card which is a little bigger than the picture. You can get card from the store.

Cut small, equal sized squares, triangles and diamond shapes from coloured paper from a magazine.

Paste the coloured shapes onto the card around the picture to make a frame.

Explain that the shapes are around the perimeter of the picture.



C₁

Materials:
card, magazine,
glue, scissors

Let the children cut out a picture from a magazine or bring a favourite photograph from home.

Let them cut a piece of card which is a bit bigger than their picture. Let them cut equal sized shapes from coloured pages in a magazine, such as squares, diamonds and triangles.

The children paste the shapes around their photograph or picture.

Pin up the pictures in the classroom or let the children take them to pin up at home.

Let the children count how many shapes they have used around the perimeter of their picture.

T₁

Pick two children from the class.
Ask one to lie on the newspaper while the other draws around them with a pencil.
Go over the pencil line with a pencil.
Explain that the line is the child's perimeter.
Ask how the children could measure the perimeter.
Encourage the children to suggest using the sticks or coconut ribs.
Lay out the sticks on the drawing.
Count them.
Write,

The perimeter is _____ sticks.

The children could also use spans or measure with a ruler.

Materials:

sheets of newspaper,
sellotaped together,
equal sized sticks or
coconut ribs, pencil

C₁

Let the children work in groups of four.
Let each group draw around one child.
Let them measure the perimeter of the drawing using sticks, spans or centimetres.
Display each group's work.

Materials:

sheets of newspaper
sellotaped together,
sticks, glue, pencil



T₁

Materials:
cardboard from the
store, card, glue, paint
or crayons, scissors, a
spinner, flat stones or
shell counters

Let the children sit together at the front of the classroom so that they can all see your demonstration.

Tell the children that you are going to show them how to make a board game called 'Round the Island'.

Draw an island on the piece of card.

Cut equal sized squares from the coloured paper.

Paste the squares around the perimeter of the island.

Write a number on each square.

Ask,

"How many squares are there?

What is the perimeter of the island?"

Write some instructions inside some of the squares, such as,

"You fall in the river. Go back 5 squares.

You find a bridge across the river. Go on 5 squares.

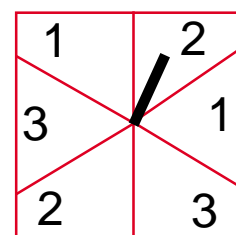
You trip on a vine. Miss a turn.

You drink a fresh coconut. Spin again."

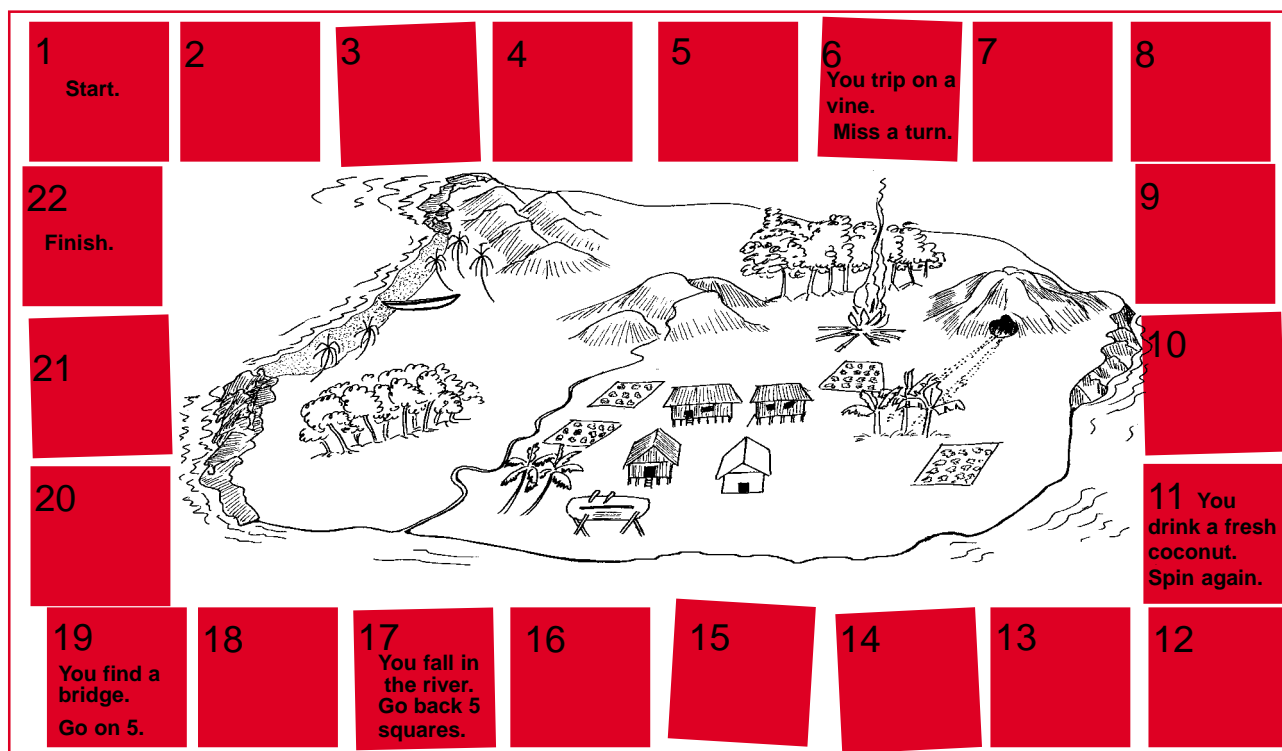
Play the game with four children to demonstrate the rules.

Give each child a flat stone or shell as a counter.

The first player to travel round the island wins the game.



An example of a Round the Island board game.



C₁

Let the children make their own 'Round the Island' game in groups of 4.
Let the children play their games.

Materials:
card, paper, glue,
scissors, crayons

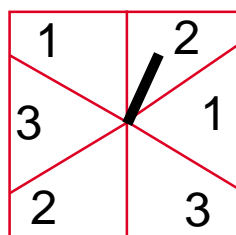


Can all the children recognise the perimeter of an object or shape?

Unit 4

T₂

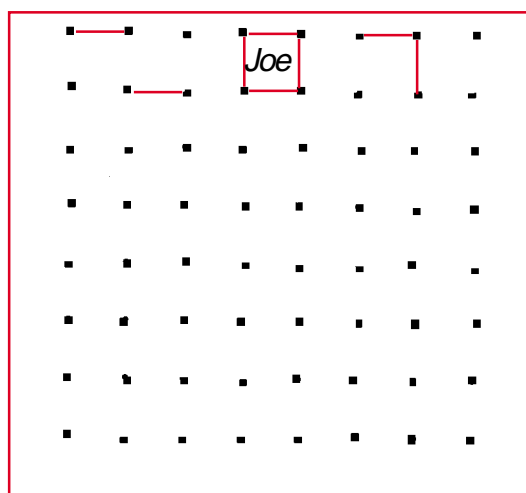
Materials:
blackboard, spinner



Draw a pattern of dots on the blackboard.
Show the children how to play 'Join the dots'.
Two players play this game.
The players take turns to spin a spinner.
If a player spins 1 they can draw 1 line.
If a player spins 2 they can draw 2 lines.
If a player spins 3 they can draw 3 lines.

Each player tries to complete a closed square using one, two or three lines.

When a player completes a square they write their name in it and score one point.



C₂

Materials:
children's resource
book, page 12,
exercise books,
spinners

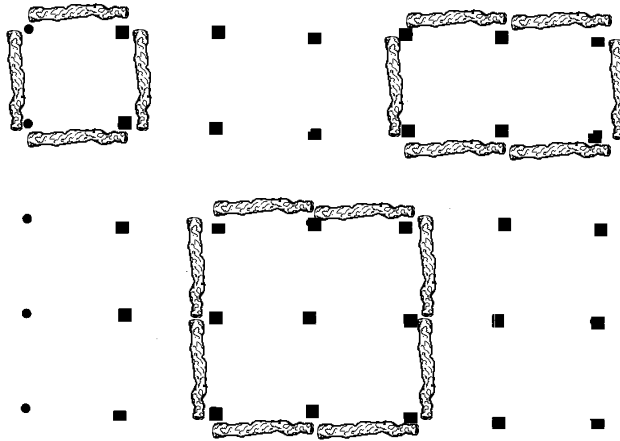
Let the children work in twos.
They trace the pattern of dots from the children's resource book, page 12.
Let each pair make a spinner.
The children take turns to spin.
They draw the number of lines shown on the spinner.
They try to complete a closed square.

They score one point for each square they complete.

T₂

Draw a grid of dots on the blackboard. Draw four 'logs' to make a square. Tell the children that this is a garden.

Materials:
blackboard



Ask,

"What is the length of one side?"

"One log."

"How many sides are there?"

"Four."

"What is the perimeter of the garden?"

"Four logs."

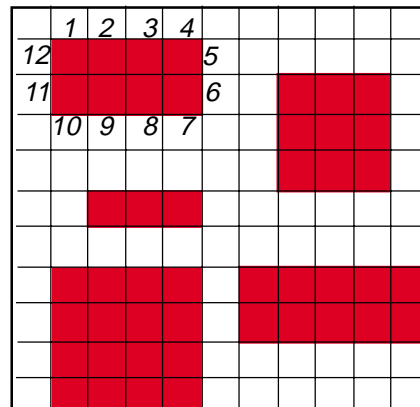
Draw more logs to make a variety of rectangular garden shapes.

Ask the children to count the logs to find the perimeter of each garden.

Draw a grid of lines on the blackboard.

Draw red squares and rectangles on top of the grid.

Ask the children to count the number of grid lines which form the perimeter of each shape.



C₂

Ask the children to look at the picture on page 13 of the children's resource book.

The picture shows some gardens with sides made from logs.

Ask the children to count the number of logs around each garden to find the perimeter.

Materials:
children's resource
book, pages 13 &
14

Ask the children to look at the grid on page 14 of the children's resource book.

Ask them to count the grid lines to find the perimeter of each shape.



Can all the children find the perimeter of a shape on a square grid by counting?

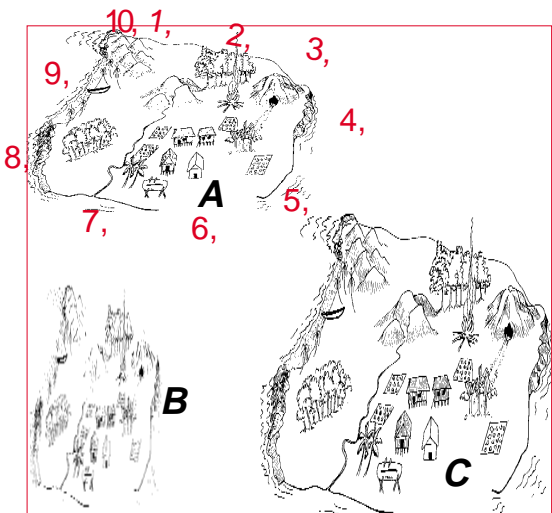
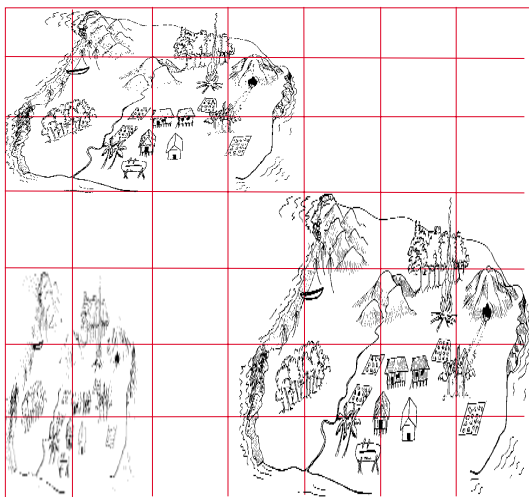
T₃

Materials:
blackboard



Before the lesson, draw a grid of squares on the blackboard using your hand span. Each square should be one span.
Draw some rectangle-shaped islands on the grid and then rub out the grid.
Show the children the islands. Ask,
"Which island do you think is the biggest?"
"Which will take longest to walk round?"
Show the children how to use your span to walk around the first island to measure its perimeter.
Write 1, 2, 3, 4, 5, 6..... beside each span.
Write,

The perimeter of island A is 10 spans.



C₃

Materials:
children's exercise
books

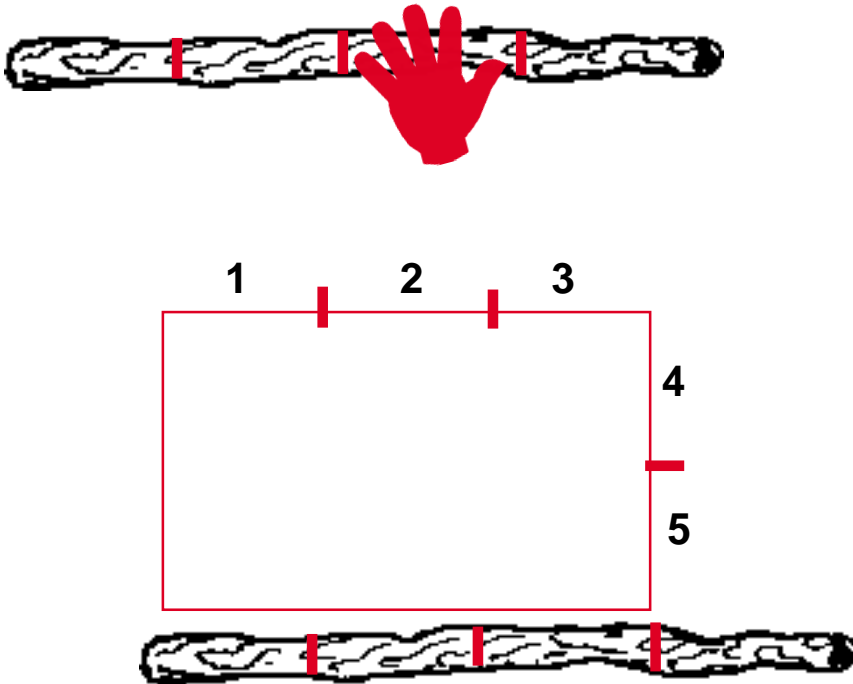
Ask the children to use their spans to measure the perimeters of objects in the classroom, such as pencil cases, books, school bags and desks.
Ask them to write the perimeters in a table in their exercise books.

| | perimeter |
|----------------|-----------|
| My pencil case | 4 spans |
| My book | 8 spans |
| My school bag | |
| My desk | |

T₃

Prepare a measuring stick. Mark the stick in spans.
Draw squares, rectangles and irregular shapes on the blackboard.
Use the measuring stick to measure each side of the shapes in spans.
Number each span, starting with number 1 at the top left of each shape.
Count the number of spans to find the perimeter of each shape.

Materials:
blackboard,
measuring stick
marked in spans



C₃

Let the children make their own measuring sticks marked in spans.
Let them use their measuring sticks to measure the perimeters of shapes on the blackboard.
Let them measure objects in the classroom and local environment such as around their desks, classroom windows, exercise books etc.
Let the children record their measurements in a table.

Materials:
measuring sticks
marked in spans



Can all the children find the perimeters of different shapes by measuring the distance all around?

Unit 4

T₄

Materials:
a collection of small
empty boxes and
small objects

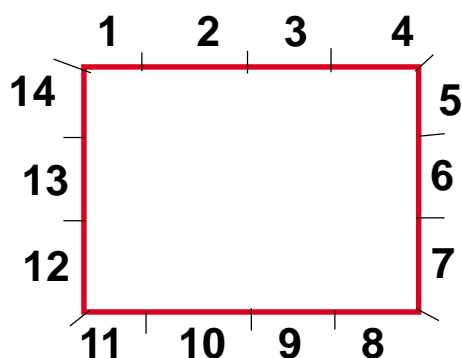
Let the children sit together at the front of the classroom so that they can all see clearly.

Show the children how to draw round one empty box.

Show them how to use a centimetre ruler to measure the perimeter of the drawing.

Mark each centimetre and number them from the top left of the shape, starting with number 1.

Repeat with two or three different objects.



C₄

Materials:
a collection of small
empty boxes and small
objects, children's
exercise books

Let the children work in small groups.

They draw round the empty boxes and other small objects in their exercise books.

Help the children to measure each side of their drawings using a centimetre ruler.

Let them mark each centimetre.

Help them to number each centimetre, starting at the top left.

T₄

Let the children sit together at the front of the classroom so that they can all see.

Lay out the 8 sticks on a mat on the floor.

Tell the children that you are going to make a garden with the 8 sticks.

Ask, "What shape shall my garden be?"

Encourage the children to suggest making a square.

Form the sticks into a square.

Ask, "What is the perimeter of the square garden?"

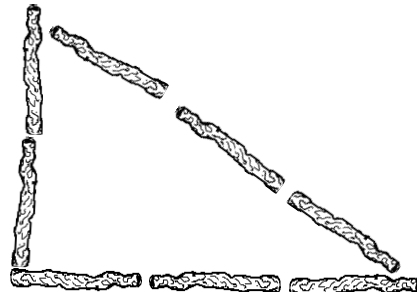
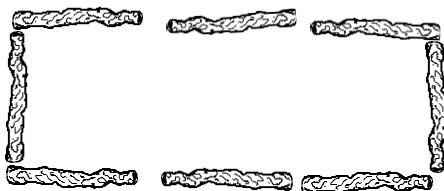
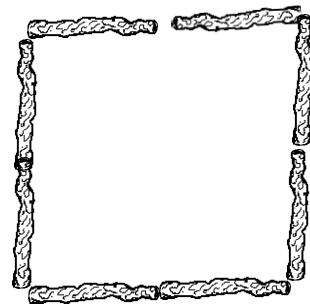
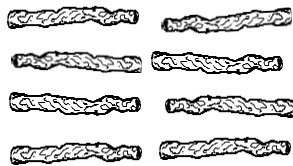
Ask the children if the sticks can be used to make different shapes.

Arrange the sticks into rectangles, triangles and other shapes.

Ask the children about the perimeter of each shape.

Materials:

8 sticks of the same length



C₄

Ask the children to work in pairs.

The children use their 8 coconut ribs to make different shapes.

They draw each shape and write down its perimeter.

How many different shapes can they make?

Materials:

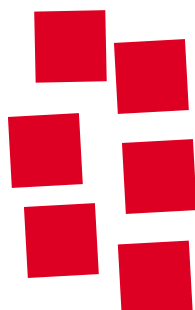
8 coconut ribs of the same length for each pair of children



Can all the children make different shapes with the same perimeter?

T₅

Materials:
six equal sized
squares cut from card



Let the children sit together at the front of the classroom so that they can all see.

Lay the squares on a mat or paste sand to the back of each card and stick them to a cloth board. Each side is one span.

Arrange the squares to make a 3 x 2 rectangle.

Ask, "What is the perimeter of the rectangle?"

Let the children count round the rectangle, starting at the top left.

The perimeter is 10 spans.

Ask the children to guess what the perimeter will be if you lay the squares in a long line.

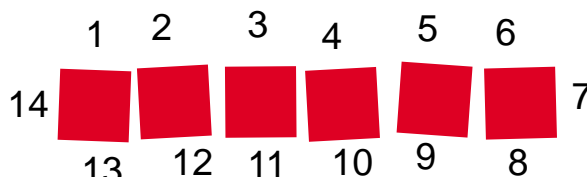
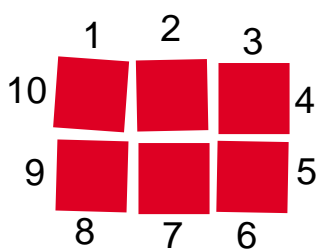
Lay out the squares in a 6 x 1 rectangle.

Let the children count round the rectangle, starting at the top left.

Ask,

"What is the perimeter of the new rectangle?"

Why is the perimeter different?"



C₅

Materials:
six equal sized
squares of paper or
card for each pair of
children

Let the children work in pairs.

Give each pair a set of six paper or card squares.

Ask the children to arrange the squares in different shapes.

Ask them to count the perimeter of each shape.

Let the children draw each shape and write its perimeter.

Talk about what the children discover.

Which shape has the smallest perimeter?

Which shape has the largest perimeter?



Can all the children arrange squares into different shapes with different sized perimeters?

Extra activities

Support

Ask the children to measure the perimeters of a book, a desk, the classroom and the playing field.

What units of measurement will they use? (centimetres, spans, strides, metres)

Ask them to record their measurements in a table.

Materials:

rulers, metre sticks,
Round the Island and
Join the Dots games
and spinners,
children's exercise
books

Play 'Round the Island' and 'Join the dots'.

Extra activities

Extension

Let the children investigate this problem on a grid of squares.
(Copy the grid from page 15 of the children's resource book.)

They have 12 logs to make a garden.

They can plant one coconut tree in each square of the grid.

What is the perimeter of the best shape?

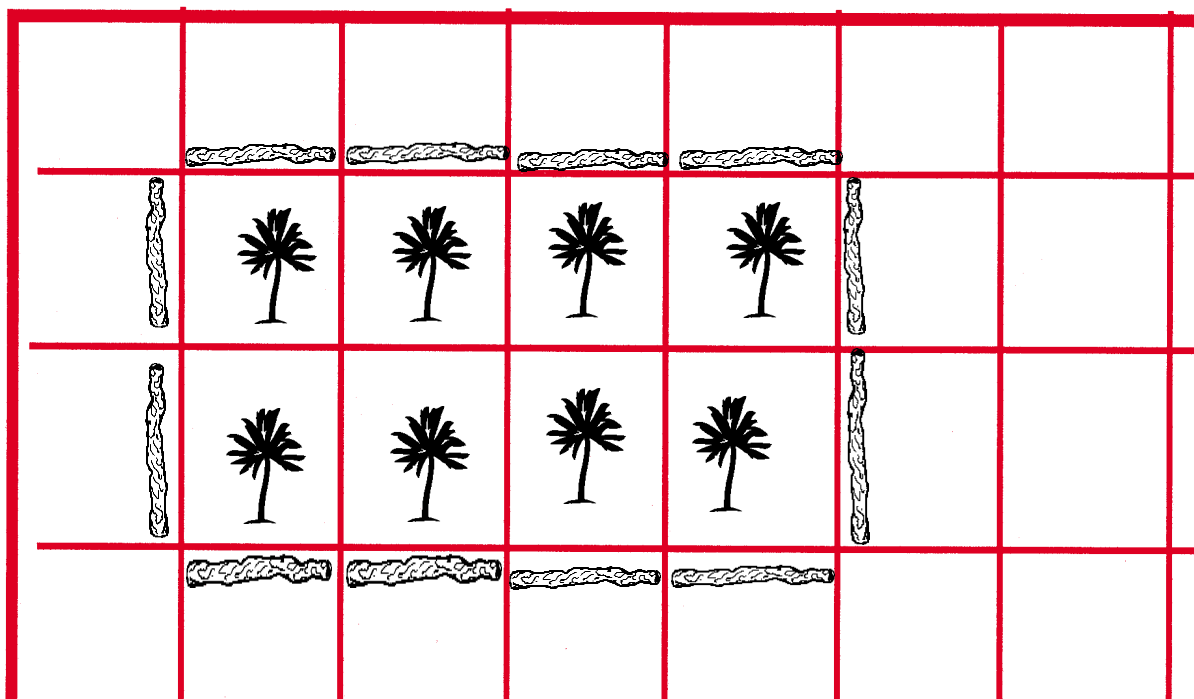
What is the perimeter of the worst shape?

How many coconut trees can be planted in the best shape?

How many coconut trees can be planted in the worst shape?

Materials:

children's resource
book, page 15



Unit 5

Number Topics 4 & 5: Addition

Aim:

to revise addition with regrouping and to practise skills in mental addition

Sequence of objectives:

1. (Number Topic 4) to revise the addition of one and two-digit numbers with regrouping
2. (Number Topic 5) to teach the children to mentally add one and two digit numbers
3. (Number Topic 5) to help the children recognise how to add the digits that make ten when mentally adding two or more numbers
4. (Number Topic 5) to teach the children how to mentally add numbers in tens, hundreds or thousands (e.g) $30 + 40$, $50 + 60$, $60 + 700$, $600 + 700$

This unit will provide an opportunity for the children to revise addition with regrouping and to practise and exercise quick mental computation in addition without using objects. It should be done through lots of oral activities with the use of number lines, flash cards and other associated materials which will assist children in their thinking.

T₁

Materials:
place value chart
number blocks

Revise the addition of one and two-digit numbers up to $19 + 9$.

Use a place value chart and number blocks to show a two-digit number such as 16.

Add a single digit number such as 8, or any other number so that the answer is over 20. This means that there will be regrouping. Repeat with different numbers.

| tens | ones |
|------|------|
| | |

Make 16

| tens | ones |
|------|------|
| | |

Add another 8

| tens | ones |
|------|------|
| | |

Regroup to make 2 tens
and 4 ones



Teach the children to do addition of one-digit numbers to two-digit numbers by counting on.

For example, $17 + 6$.

Start with 17.
Count on 6. Use your fingers.
17, 18, 19, 20, 21, 22, 23.
The answer is 23.

Materials:

children's exercise books, Addition Bingo question cards

Play a number game to help the children become more familiar with addition of one-digit numbers to two-digit numbers up to 20.

Play Addition Bingo.

Ask the children to make a bingo card of six squares in their exercise books.

| | | |
|----|----|----|
| 3 | 7 | 11 |
| 19 | 21 | 27 |

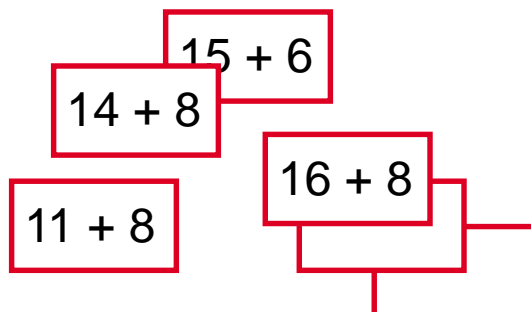
Now ask the children to write any six numbers between 0 and 29.

Read out the addition sums from the Addition Bingo question cards.

Give the children time to find the answer by counting on.

If they have the answer on their Bingo card they tick it.
The first child to tick all six numbers shouts Bingo and wins the game.

| | | |
|--|--|----|
| 3 | 7 | 11 |
| <input checked="" type="checkbox"/> 19 | <input checked="" type="checkbox"/> 21 | 27 |



T₁

Materials:
place value chart
number blocks

Revise the addition of one and two-digit numbers up to $90 + 9$.

Use a place value chart and number blocks to show a two-digit number such as 37.

Add a single digit number such as 5, or any other number so that the ones must be regrouped.

Repeat with different numbers.

| <i>tens</i> | <i>ones</i> | <i>tens</i> | <i>ones</i> |
|-------------|-------------|---------------|-----------------------------------|
| | | | |
| Make 37 | | Add another 5 | Regroup to make 4 tens and 2 ones |

C₁

Materials:
children's resource
book, page 16,
number blocks

The children complete
the activities in their
resource book,
page 16.

They can use number
blocks to help with
regrouping.

Monitor the children as
they work and give help
to anyone who has
difficulties.

Unit 5. Number

Copy and complete each addition sum in your exercise book. Write the answer before you copy the next sum.

Example:

$$\begin{array}{r} 1. \quad 3 \\ + 12 \\ \hline 15 \end{array}$$

Copy and complete these addition sums.

- | | | | | |
|--|--|--|--|--|
| 1. $\begin{array}{r} 3 \\ + 12 \\ \hline \end{array}$ | 2. $\begin{array}{r} 4 \\ + 13 \\ \hline \end{array}$ | 3. $\begin{array}{r} 6 \\ + 10 \\ \hline \end{array}$ | 4. $\begin{array}{r} 7 \\ + 11 \\ \hline \end{array}$ | 5. $\begin{array}{r} 5 \\ + 14 \\ \hline \end{array}$ |
| 6. $\begin{array}{r} 8 \\ + 17 \\ \hline \end{array}$ | 7. $\begin{array}{r} 7 \\ + 14 \\ \hline \end{array}$ | 8. $\begin{array}{r} 9 \\ + 15 \\ \hline \end{array}$ | 9. $\begin{array}{r} 7 \\ + 16 \\ \hline \end{array}$ | 10. $\begin{array}{r} 4 \\ + 18 \\ \hline \end{array}$ |
| 11. $\begin{array}{r} 9 \\ + 25 \\ \hline \end{array}$ | 12. $\begin{array}{r} 5 \\ + 27 \\ \hline \end{array}$ | 13. $\begin{array}{r} 8 \\ + 23 \\ \hline \end{array}$ | 14. $\begin{array}{r} 4 \\ + 28 \\ \hline \end{array}$ | 15. $\begin{array}{r} 7 \\ + 26 \\ \hline \end{array}$ |
| 16. $\begin{array}{r} 7 \\ + 45 \\ \hline \end{array}$ | 17. $\begin{array}{r} 3 \\ + 38 \\ \hline \end{array}$ | 18. $\begin{array}{r} 6 \\ + 54 \\ \hline \end{array}$ | 19. $\begin{array}{r} 8 \\ + 37 \\ \hline \end{array}$ | 20. $\begin{array}{r} 9 \\ + 49 \\ \hline \end{array}$ |
| 21. $\begin{array}{r} 9 \\ + 64 \\ \hline \end{array}$ | 22. $\begin{array}{r} 6 \\ + 88 \\ \hline \end{array}$ | 23. $\begin{array}{r} 7 \\ + 70 \\ \hline \end{array}$ | 24. $\begin{array}{r} 5 \\ + 66 \\ \hline \end{array}$ | 25. $\begin{array}{r} 4 \\ + 90 \\ \hline \end{array}$ |
| 26. $\begin{array}{r} 7 \\ + 77 \\ \hline \end{array}$ | 27. $\begin{array}{r} 9 \\ + 46 \\ \hline \end{array}$ | 28. $\begin{array}{r} 4 \\ + 69 \\ \hline \end{array}$ | 29. $\begin{array}{r} 7 \\ + 98 \\ \hline \end{array}$ | 30. $\begin{array}{r} 5 \\ + 87 \\ \hline \end{array}$ |

Add the numbers in the boxes.

- | | | | | | |
|--|--|--|--|--|--|
| 21. $\begin{array}{ c } \hline 56 \\ \hline 7 \\ \hline \end{array}$ | 21. $\begin{array}{ c } \hline 43 \\ \hline 9 \\ \hline \end{array}$ | 21. $\begin{array}{ c } \hline 8 \\ \hline 64 \\ \hline \end{array}$ | 21. $\begin{array}{ c } \hline 6 \\ \hline 75 \\ \hline \end{array}$ | 21. $\begin{array}{ c } \hline 95 \\ \hline 8 \\ \hline \end{array}$ | 21. $\begin{array}{ c } \hline 87 \\ \hline 9 \\ \hline \end{array}$ |
|--|--|--|--|--|--|



Can all the children do addition of one-digit to two-digit numbers with regrouping?

T₂

Revise with the children the mental addition of one-digit to one-digit numbers. eg. $3 + 7$, $4 + 5$, $8 + 6$, etc.

Use the 0 - 9 number cards.

Hold up two cards, such as 5 and 7.

Help the children to find ways to do the addition, such as,

"5 + 5 equals 10.

5 + 7 is two more than 10.

5 + 7 is 12."

Repeat with different cards.

Help the children to find ways to do the additions in their heads.

Materials:
number cards 0-9

C₂

Play the game again as a group game.

Let the children sit together in groups of three or four.

Give each group a set of 0-9 number cards.

Write any number between 1 and 17 on the blackboard, such as 11.

Each group has to find two cards which add together to make 11.



Repeat with different numbers.

Materials:
a set of number cards
0-9 for each group

Unit 5

T₂

Materials:
large number cards
0-20, an empty tin,
10 stones

This activity helps the children to count on when doing addition.

Prepare some stones, large number cards 0-20 and an empty milk tin.

Play a game to practise the children's mental addition skills.

Arrange the cards in two piles, 10-20 and 0-9.

Pick a card from each pile, such as 12 and 5.

Say,

"There are 12 stones in the tin.

How many will there be if I add 5?"

Let the children say the answer.

12

5

After a few seconds, drop 5 stones, one at a time, into the tin.

Ask the children to count on from 12 as you drop in the 5 stones.

The children should get the total 17.

Repeat with different numbers such as $16 + 3$, $14 + 6$ and $18 + 7$.

C₂

Materials:
one set of number
cards 0-20 for each
group, empty tins,
stones,
exercise books

The children work in groups of three or four.

Give each group a set of number cards, stones and an empty tin.

The children select one child to be the leader.

The leader lays out the cards in two piles, 10-20 and 0-9.

The leader picks one card from each pile, such as 14 and 6.

They say,

"There are 14 stones in the tin.

How many will there be if I add 6?"

The other children quickly do the mental calculation by counting on. They write the answer in their exercise book.

After a few seconds, the leader drops in the 6 stones and the other children count on from 14 to 20.

If they have the answer 20 they get one point.

The first child to get 10 points becomes the leader.

T₂

Prepare about twenty number cards with numbers between 11 and 99, such as 25, 38, 67, 73, 84, and 90.

Play a game to practise the children's mental addition of one-digit numbers to two-digit numbers up to 90.

Arrange the cards in two piles, 10-90 and 0-9.
Pick a card from each pile, such as 38 and 6.

Say,
*"There are 38 stones in the tin.
How many will there be if I add 6?"*
Let the children say the answer.

After a few seconds, drop 6 stones, one at a time, into the tin.
Ask the children to count on from 38 as you drop in the 6 stones.
The children should get the total 44.

Repeat with different numbers such as $67 + 3$, $25 + 6$ and $84 + 7$.

Materials:
number cards 0-9, a
set of teacher's
number cards 10-90,
an empty tin,
10 stones

C₂

The children work in groups of three or four.
Give each group a set of number cards, stones and an empty tin.

The children select one child to be the leader.
The leader lays out the cards in two piles, 10-90 and 0-9.
The leader picks one card from each pile, such as 42 and 7.
They say,
*"There are 42 stones in the tin.
How many will there be if I add 7?"*

The other children quickly do the mental calculation by counting on. They write the answer in their exercise book.

After a few seconds, the leader drops in the 7 stones and the other children count on from 42 to 49.
If they have the answer 49 they get one point.
The first child to get 10 points becomes the leader.

Materials:
one set of number
cards 0-9 and 10-90
for each group,
empty tins, stones,
exercise books



Can all the children mentally add one-digit to two-digit numbers with answers up to 99?

Unit 5

T₃

Materials:
two or four sets of
number cards, 0-10

Let the children sit together on a mat at the front of the classroom so that they can all see.

Lay out all the cards, face up.

Ask one of the children to take any two cards which add together to make ten, such as 3+7 or 6+4.

Continue asking different children until there are no cards left.

Collect the cards and repeat until all the children are familiar with the pairs of numbers which make ten.

(0+10, 1+9, 2+8, 3+7, 4+6, 5+5)

C₃

Materials:
two sets of number
cards 0-10 for each
group

The children play The Memory Game in groups of four.

They lay out all the cards face down.

They take turns to turn over two cards.

If the cards add up to ten, they keep them.

If the cards do not add up to ten, they turn them back face down in the same place.

When all the cards have been picked the children count their cards.

The child who has most cards wins the game.

T₃

Let the children sit together on a mat at the front of the classroom so that they can all see.

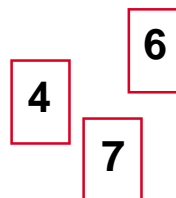
Pick three cards. Two of them must add to ten.
Lay out the three cards.

The children must add the numbers.
First they look for any two which make ten.
Then they add the third.

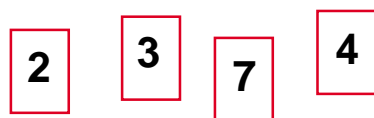
The total is 17. ($4 + 6 = 10$. $10 + 7 = 17$)

Continue picking three cards and asking the children to add the two which make ten first.

When the children are familiar with three cards, try four cards.



Materials:
number cards, 0-10



C₃

The children complete the activities in their resource book, page 17.

Number. Unit 5

Write the answers only to these addition sums.

Example.

$$\begin{array}{r} 3 \\ 2 \\ + 7 \\ \hline 12 \end{array}$$

First add the two numbers which make ten.

| | | | | | |
|--|--|--|--|--|---|
| 1. $\begin{array}{r} 3 \\ 2 \\ + 7 \\ \hline \end{array}$ | 2. $\begin{array}{r} 4 \\ 3 \\ + 6 \\ \hline \end{array}$ | 3. $\begin{array}{r} 5 \\ 5 \\ + 3 \\ \hline \end{array}$ | 4. $\begin{array}{r} 2 \\ 8 \\ + 4 \\ \hline \end{array}$ | 5. $\begin{array}{r} 6 \\ 7 \\ + 3 \\ \hline \end{array}$ | 6. $\begin{array}{r} 5 \\ 9 \\ + 5 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 0 \\ 6 \\ + 10 \\ \hline \end{array}$ | 8. $\begin{array}{r} 2 \\ 5 \\ + 9 \\ \hline \end{array}$ | 9. $\begin{array}{r} 6 \\ 8 \\ + 2 \\ \hline \end{array}$ | 10. $\begin{array}{r} 8 \\ 6 \\ + 4 \\ \hline \end{array}$ | 11. $\begin{array}{r} 5 \\ 8 \\ + 5 \\ \hline \end{array}$ | 12. $\begin{array}{r} 7 \\ 5 \\ + 3 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 2 \\ 9 \\ + 8 \\ \hline \end{array}$ | 14. $\begin{array}{r} 9 \\ 9 \\ + 1 \\ \hline \end{array}$ | 15. $\begin{array}{r} 5 \\ 5 \\ + 2 \\ \hline \end{array}$ | 16. $\begin{array}{r} 3 \\ 8 \\ + 7 \\ \hline \end{array}$ | 17. $\begin{array}{r} 6 \\ 9 \\ + 4 \\ \hline \end{array}$ | 18. $\begin{array}{r} 0 \\ 10 \\ + 7 \\ \hline \end{array}$ |

Add the numbers in the boxes.

| | | | |
|---|---|---|--|
| 19. $\begin{array}{ c c } \hline 4 & 3 \\ \hline 7 & \\ \hline \end{array}$ | 20. $\begin{array}{ c c } \hline 6 & 9 \\ \hline 4 & \\ \hline \end{array}$ | 21. $\begin{array}{ c c } \hline 5 & 5 \\ \hline 8 & \\ \hline \end{array}$ | 22. $\begin{array}{ c c } \hline 5 & 10 \\ \hline 0 & \\ \hline \end{array}$ |
| 23. $\begin{array}{ c c } \hline 8 & 4 \\ \hline 2 & \\ \hline \end{array}$ | 24. $\begin{array}{ c c } \hline 9 & 1 \\ \hline 5 & \\ \hline \end{array}$ | 25. $\begin{array}{ c c } \hline 8 & 4 \\ \hline 2 & \\ \hline \end{array}$ | 26. $\begin{array}{ c c } \hline 3 & 8 \\ \hline 7 & \\ \hline \end{array}$ |

Materials:
children's resource book, page 17



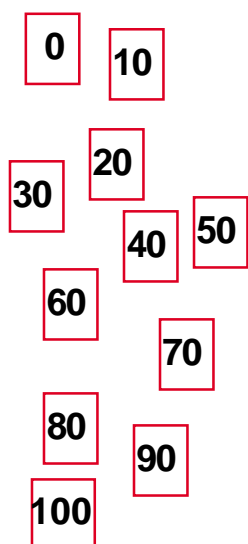
Can all the children recognise the pairs of numbers which add together to make ten?

Unit 5

T₄

Materials:

two sets of cards
marked in tens, 0-100



Let the children sit together at the front of the class.

Place the cards face up on a mat so that the children can all see.

Ask one of the children to take any two cards which add together to make one hundred, such as $30+70$ or $60+40$.

Continue asking different children until there are no cards left.

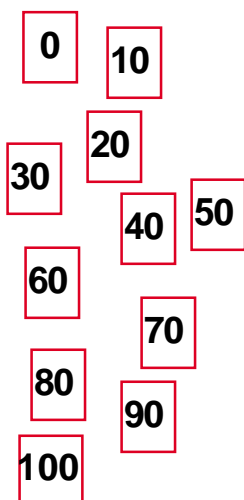
Collect the cards and repeat until all the children are familiar with the pairs of numbers which make one hundred.

($0+100$, $10+90$, $20+80$, $30+70$, $40+60$, $50+50$)

C₄

Materials:

two sets of cards
marked in tens, 0-100
for each group



The children play The Memory Game in groups of four.

They lay out all the cards face down.

They take turns to turn over two cards.

If the cards add up to one hundred, they keep them.

If the cards do not add up to one hundred, they turn them back face down in the same place.

When all the cards have been picked the children count their cards.

The child who has most cards wins the game.

T₄

Revise addition of single digit numbers, such as,
 $3 + 7$, $4 + 5$, $8 + 8$, etc.

Ask addition stories such as,

"I have 4 oranges and 5 limes. How many fruits is that?"

Write the addition sum on the blackboard.

Repeat with different stories.

Now ask addition stories involving tens, such as,

"I have 40 oranges and 50 limes. How many fruits is that?"

Tell the children to think of 4 tens add 5 tens = 9 tens or 90.

Tell more stories, such as,

"I have 50 bananas and 70 limes. How many fruits is that?"

Tell the children to think of

5 tens add 7 tens = 12 tens or 120.

Write the addition sums on the blackboard.

Repeat with different stories.

Materials:
 blackboard

C₄

The children complete the activities in their resource book, page 18.

Unit 5. Number

Example.
 Write the answers only in your exercise book.
 1. a. 50 (think of 3 tens add 2 tens = 5 tens)
 b. 80 (think of $2 + 6 = 8$, so $20 + 60 = 80$)

Add the number in the red circle to each number in the big circle.

1.

2.

Add the numbers which make 100 first. Write the answers only.

| | | | | | |
|---|---|---|---|---|---|
| 1. $\begin{array}{r} 30 \\ 40 \\ + 70 \\ \hline \end{array}$ | 2. $\begin{array}{r} 10 \\ 30 \\ + 90 \\ \hline \end{array}$ | 3. $\begin{array}{r} 20 \\ 80 \\ + 50 \\ \hline \end{array}$ | 4. $\begin{array}{r} 50 \\ 70 \\ + 50 \\ \hline \end{array}$ | 5. $\begin{array}{r} 70 \\ 60 \\ + 40 \\ \hline \end{array}$ | 6. $\begin{array}{r} 20 \\ 70 \\ + 80 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 60 \\ 70 \\ + 30 \\ \hline \end{array}$ | 8. $\begin{array}{r} 20 \\ 50 \\ + 50 \\ \hline \end{array}$ | 9. $\begin{array}{r} 90 \\ 80 \\ + 10 \\ \hline \end{array}$ | 10. $\begin{array}{r} 40 \\ 90 \\ + 60 \\ \hline \end{array}$ | 11. $\begin{array}{r} 80 \\ 60 \\ + 20 \\ \hline \end{array}$ | 12. $\begin{array}{r} 10 \\ 50 \\ + 90 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 60 \\ 40 \\ + 50 \\ \hline \end{array}$ | 14. $\begin{array}{r} 50 \\ 50 \\ + 80 \\ \hline \end{array}$ | 15. $\begin{array}{r} 30 \\ 70 \\ + 50 \\ \hline \end{array}$ | 16. $\begin{array}{r} 80 \\ 20 \\ + 90 \\ \hline \end{array}$ | 17. $\begin{array}{r} 90 \\ 10 \\ + 50 \\ \hline \end{array}$ | 18. $\begin{array}{r} 70 \\ 30 \\ + 40 \\ \hline \end{array}$ |

18

Materials:
 children's resource book, page 18

Unit 5

T₄

Materials:
blackboard

Continue mental addition of hundreds.

Ask addition stories such as,

"I have 400 oranges and 500 limes. How many fruits is that?"

Tell the children to think of

4 hundreds add 5 hundreds = 9 hundreds or 900

Tell more stories such as,

"I have 500 bananas and 700 limes. How many fruits is that?"

Tell the children to think of

5 hundreds add 7 hundreds = 12 hundreds or 1200.

Write the addition sums on the blackboard.

Repeat with different stories.

C₄

Materials:
children's resource
books, page 19

The children
complete
the activities
in their
resource
book,
page 19.

Number. Unit 5

Example.

Write the answers only in your exercise book.

1. 700

$$\begin{array}{r} 1. \quad 300 \\ + 400 \\ \hline \end{array}$$

Write the answers only.

| | | | | | |
|---|---|---|---|---|---|
| 1. $\begin{array}{r} 300 \\ + 400 \\ \hline \end{array}$ | 2. $\begin{array}{r} 200 \\ + 500 \\ \hline \end{array}$ | 3. $\begin{array}{r} 400 \\ + 500 \\ \hline \end{array}$ | 4. $\begin{array}{r} 100 \\ + 200 \\ \hline \end{array}$ | 5. $\begin{array}{r} 700 \\ + 200 \\ \hline \end{array}$ | 6. $\begin{array}{r} 800 \\ + 100 \\ \hline \end{array}$ |
| 7. $\begin{array}{r} 600 \\ + 400 \\ \hline \end{array}$ | 8. $\begin{array}{r} 700 \\ + 600 \\ \hline \end{array}$ | 9. $\begin{array}{r} 400 \\ + 800 \\ \hline \end{array}$ | 10. $\begin{array}{r} 500 \\ + 700 \\ \hline \end{array}$ | 11. $\begin{array}{r} 900 \\ + 400 \\ \hline \end{array}$ | 12. $\begin{array}{r} 700 \\ + 800 \\ \hline \end{array}$ |
| 13. $\begin{array}{r} 500 \\ + 900 \\ \hline \end{array}$ | 14. $\begin{array}{r} 300 \\ + 700 \\ \hline \end{array}$ | 15. $\begin{array}{r} 600 \\ + 800 \\ \hline \end{array}$ | 16. $\begin{array}{r} 900 \\ + 300 \\ \hline \end{array}$ | 17. $\begin{array}{r} 400 \\ + 700 \\ \hline \end{array}$ | 18. $\begin{array}{r} 800 \\ + 500 \\ \hline \end{array}$ |

Add the two numbers which make 1000 first.

| | | | | | |
|---|---|---|---|---|---|
| 19. $\begin{array}{r} 500 \\ + 200 \\ \hline \end{array}$ | 20. $\begin{array}{r} 700 \\ + 300 \\ \hline \end{array}$ | 21. $\begin{array}{r} 200 \\ + 500 \\ \hline \end{array}$ | 22. $\begin{array}{r} 400 \\ + 700 \\ \hline \end{array}$ | 23. $\begin{array}{r} 300 \\ + 900 \\ \hline \end{array}$ | 24. $\begin{array}{r} 900 \\ + 400 \\ \hline \end{array}$ |
|---|---|---|---|---|---|

Write the answers only.

| | | | | |
|---|---|---|---|---|
| 13. $\begin{array}{r} 5000 \\ + 9000 \\ \hline \end{array}$ | 14. $\begin{array}{r} 3000 \\ + 7000 \\ \hline \end{array}$ | 15. $\begin{array}{r} 6000 \\ + 8000 \\ \hline \end{array}$ | 16. $\begin{array}{r} 9000 \\ + 3000 \\ \hline \end{array}$ | 17. $\begin{array}{r} 4000 \\ + 7000 \\ \hline \end{array}$ |
|---|---|---|---|---|



Can all the children mentally add numbers in tens, hundreds and thousands?

Extra activities Support

Play the games from this unit to give the children more practise in mental addition.

Play the Memory Game, Bingo and Beat the Teacher.

Let them use number lines and number blocks to help visualise the additions.

Materials:
number cards, an empty tin, some stones

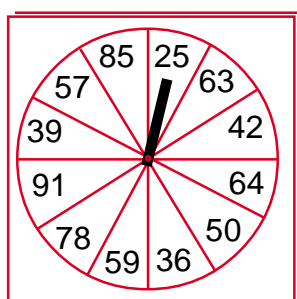
Extra activities Extension

Make the Addition Spinners by cutting out the cards and pasting them to pieces of timber or thick card.

Materials:
Addition Spinner game, number cards 0-10

The children play in twos.
They place one card beside the clock.

They take turns to spin the spinner.
They add the number on the card to the number shown by the clock.
The first child to get ten correct wins the game.



9

$$25 + 9 = 34$$

Let the children work in twos to do this addition challenge.

Give each group a set of 0-10 number cards.
Ask them to add up all the numbers to find the total.

Can they find an easy way to do it?

Unit 6

Number Topics 6 & 7: Subtraction

Aim:

to teach the subtraction of 2 and 3 digit numbers with trading from the tens and hundreds.

Sequence of objectives:

1. (Topic 6 activity 1) to revise subtraction without trading
2. (Topic 6 activity 2) to teach subtraction of two and three digit numbers with trading from the tens and hundreds
3. (Topic 7 activity 1) to practise subtraction problems including problems with zero in the ones and tens.

In this unit the children first revise subtraction without trading. Through the use of practical materials, they then learn how to subtract with trading in the tens and hundreds.

T₁

Materials:
blackboard,
children's exercise
books

Play subtraction bingo to revise subtraction facts and processes. Ask the children to make a bingo card with four squares. Ask them to pick any four numbers from 0 to 9 and write one in each square.

| | |
|---|---|
| 2 | 8 |
| 6 | 3 |

Write subtraction sums, such as these, on cards:

*Ten minus one,
Ten minus two,
Ten take away six
Ten take away eight.
There are ten fish. Nine swim away. How many are left?
Ten minus four.
I had ten pencils. I gave away seven. How many are left?
Ten take away three.
Ten minus five.
Ten take away ten."*

Mix the cards. Call out the subtraction sums slowly one by one.

If the children have the answer on their bingo card they tick it. The first child to tick all four answers shouts, '**Bingo**'.

Play again and let the winner call out the questions.



The children play a subtraction game in pairs.

They sit facing each other.

They each put their hands behind their back.

They count together, "**One, two, three.**"

They each bring their hands to the front and show a number of fingers, such as 5 and 8.

They must subtract the smaller number from the larger number. The first child to say the correct answer wins one point.

This game can also be played using two sets of cards 0-10.

Materials:
number cards 0-10,
children's resource
book, page 20

The children complete the subtraction problems on page 20 of the children's resource book.

Unit 6. Number

Talk about the activities with your teacher before you start. Write the answers in your exercise book.

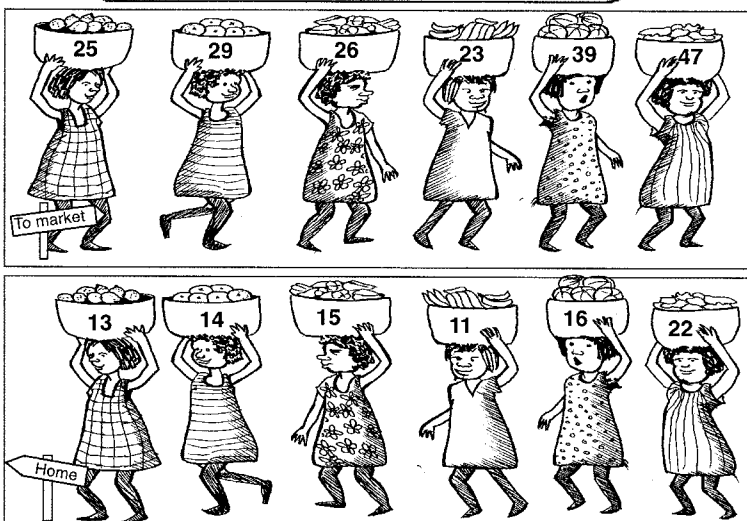


Example. 25 limes in the basket going to market.
1. 13 limes in the basket coming back.
How many were sold at the market?

$$\begin{array}{r} 25 \\ -13 \\ \hline 12 \end{array}$$

12 limes were sold

How many of each fruit went to market? How many came back?
How many were sold at the market?
Write each subtraction sum in your exercise book.



1. How many limes were sold?
2. How many oranges were sold?
3. How many peppers were sold?
4. How many bananas were sold?
5. How many melons were sold?
6. How many kumara were sold?

Unit 6

T₁

Materials:
blackboard

Make up some subtraction stories using three digit numbers. Try to make the stories realistic, such as,
"There are 247 children in school. 124 are girls. How many are boys?"

Show the subtraction story on the blackboard. Remind the children to start with the ones, then the tens, then the hundreds.

$$\begin{array}{r} 247 \\ - 124 \\ \hline 123 \end{array}$$

Repeat with different subtraction stories, such as,
"There were 153 lines on a tree. The wind blew down 121. How many were left?"

A drum had 258 litres of petrol. 125 litres were sold. How many litres were left?

An exercise book had 158 pages. Mary wrote on 36 pages. How many pages were left?

John collected 127 shells. He gave 16 to Frank. How many did John have left?"

C₁

Materials:
children's resource
book, page 21

Ask the children to complete the exercises in the children's resource book, page 21.

Let the children use number blocks.

Remind the children to start with the ones.

Number. Unit 6

Talk about the activities with your teacher before you start.
Use number blocks to help you.
Write the answers in your exercise book.

Example:
Make 158.
Take away 35.
How many left?
1. $\begin{array}{r} 158 \\ - 35 \\ \hline 123 \end{array}$

2. Make 164. Take away 52. How many left?
 $\begin{array}{r} 164 \\ - 52 \\ \hline \end{array}$

3. Make 136. Take away 25. How many left?
 $\begin{array}{r} 136 \\ - 25 \\ \hline \end{array}$

4. Make 263. Take away 41. How many left?
 $\begin{array}{r} 263 \\ - 41 \\ \hline \end{array}$

5. Make 275. Take away 63. How many left?
 $\begin{array}{r} 275 \\ - 63 \\ \hline \end{array}$

6. Make 368. Take away 62. How many left?
 $\begin{array}{r} 368 \\ - 62 \\ \hline \end{array}$

7. $\begin{array}{r} 139 \\ - 124 \\ \hline \end{array}$ 8. $\begin{array}{r} 256 \\ - 125 \\ \hline \end{array}$ 9. $\begin{array}{r} 368 \\ - 142 \\ \hline \end{array}$ 10. $\begin{array}{r} 429 \\ - 117 \\ \hline \end{array}$ 11. $\begin{array}{r} 365 \\ - 214 \\ \hline \end{array}$ 12. $\begin{array}{r} 537 \\ - 125 \\ \hline \end{array}$



Can all the children do subtraction of three digit numbers without trading?

T₂

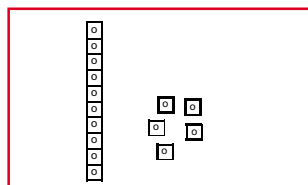
Let the children sit together at the front of the classroom so that they can all see. Paste sand to the back of the number blocks so that they stick to the cloth board.

Tell a subtraction story which involves trading, such as, "15 children went out to play. 8 played football.

How many played net ball?"

Write the problem on the blackboard and show it on the cloth board.

$$\begin{array}{r} 15 \\ - 8 \\ \hline \end{array}$$

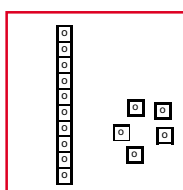


Materials:

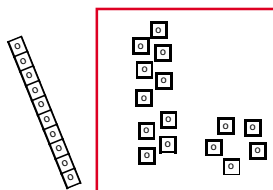
blackboard, number blocks, a cloth board

Ask the children to solve the problem. Ask them how they did it. (Counting on from 8 to 15 or using the addition fact $8 + 7 = 15$).

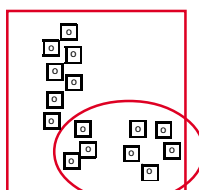
Ask one of the children to show the subtraction using the number blocks.



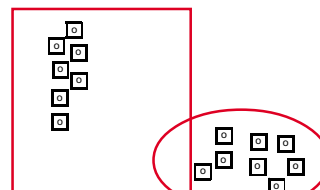
There are only 5 ones so you can't take away 8.



Change the ten to ten ones.



Take away 8.



There are 7 left.

Repeat with different problems, such as $16 - 7$, $15 - 8$, $12 - 5$, $11 - 7$, $13 - 9$ etc up to $18 - 9$.

C₂

Unit 6. Number

Talk about the activities with your teacher before you start. Use number blocks. Write the answers in your exercise book.

Example. 1. Make 17. Take away 8. How many are left? 1. 9 left.

Change a ten.

1. Make 17. Take away 8. How many are left?

2. Make 12. Take away 5. How many are left?

3. Make 13. Take away 7. How many are left?

4. Make 14. Take away 6. How many are left?

Use number blocks to do these subtraction sums.

5. $17 - 9$ 6. $15 - 8$ 7. $12 - 5$ 8. $14 - 7$ 9. $11 - 4$ 10. $13 - 6$

Ask the children to complete the activities in their resource book, page 22.

Talk about the activities before the children start.

Monitor the children as they work and give help to those who need it.

Materials:

number blocks, children's resource book, page 22

Unit 6

T₂

Materials:
blackboard

Demonstrate subtraction from numbers up to 18 with trading.

Demonstrate changing a ten in the subtraction sum.

| | | | |
|---|--|---|--|
| $\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$ <p>1. 12 take away 8</p> | $\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$ <p>2. Subtract the ones.
You can't take 8 from 2.</p> | $\begin{array}{r} 12 \text{ ones} \\ \cancel{1} \cancel{2} \\ - 8 \\ \hline \end{array}$ <p>3. Change the ten.
There are twelve ones now.</p> | $\begin{array}{r} 12 \\ \cancel{1} \cancel{2} \\ - 8 \\ \hline 4 \end{array}$ <p>4. Count on from 8 to 12.
The answer is 4</p> |
|---|--|---|--|

Repeat with many more examples.

C₂


Materials:
children's resource
book, page 23

The children complete the exercises in their resource book,
page 23.
Monitor the children as they work.
Help those who have difficulty with the activities.


Number. Unit 6

Use number blocks to help you do these subtraction sums.
Write the answers in your exercise book.


Example.
1. Take away 8.
How many left?

$$\begin{array}{r} 12 \\ - 8 \\ \hline 4 \end{array}$$



1. Take away 8.
How many left?




2. Take away 7.
How many left?




3. Take away 6.
How many left?




4. Take away 4.
How many left?



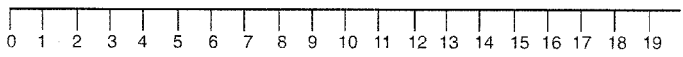
5. Take away 5.
How many left?



6. Take away 3.
How many left?



Use the number line to do these subtraction sums.



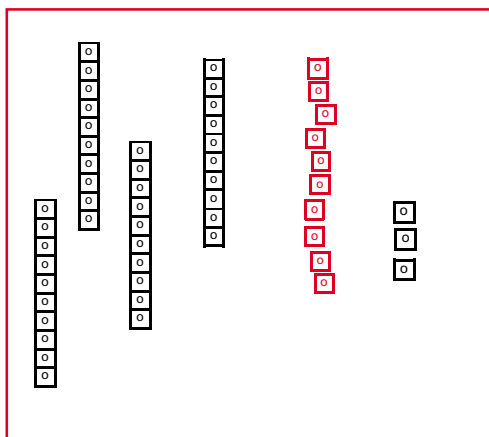
7. $\begin{array}{r} 13 \\ - 5 \\ \hline \end{array}$ 8. $\begin{array}{r} 16 \\ - 7 \\ \hline \end{array}$ 9. $\begin{array}{r} 15 \\ - 6 \\ \hline \end{array}$ 10. $\begin{array}{r} 18 \\ - 9 \\ \hline \end{array}$ 11. $\begin{array}{r} 16 \\ - 7 \\ \hline \end{array}$ 12. $\begin{array}{r} 15 \\ - 8 \\ \hline \end{array}$

T₂

Write the number 53 on the blackboard. Show the number using number blocks or by drawing on the blackboard.
Ask one of the children to change a ten for ten ones.

Materials:
blackboard, number blocks, cloth board

4 13
~~53~~



Ask,
"How many tens are there now?" **"Four tens."**
"How many ones are there now?" **"Thirteen ones."**

"So 53 is the same as four tens and thirteen ones."

$$53 = 4 \text{ tens} + 13 \text{ ones}$$

Repeat with 36, 42, 57 etc.

C₂

Ask the children to write each number below in their exercise books.

Materials:
exercise books,
number blocks

54, 27, 35, 42, 26, 56, 38, 21, 49, 52, 37

Ask them to make each number using number blocks.

Now ask them to change a ten and re-write each number.

For example,

$$54 = 4 \text{ tens and } 14 \text{ ones}$$

$$27 = 1 \text{ ten and } 17 \text{ ones.}$$

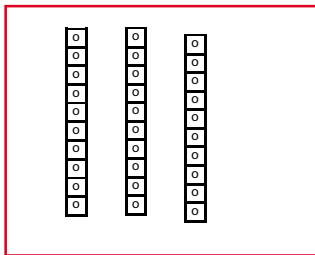
Repeat with a different set of numbers.

T₂

Materials:
blackboard, number
blocks, cloth board

Tell the children a subtraction story, for example.
*"There were 32 packets of Twisties in a box.
The store keeper sold six.
How many were left?"*

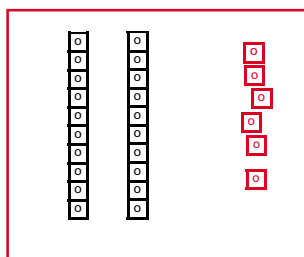
Show 32 by drawing three tens and two ones on the blackboard
or use number blocks on the cloth board.



Ask the children to count as you take away six.

After taking away two, ask the children,
"What shall I do now? There are no more ones."
Encourage the children to answer, **"Change a ten."**

Change a ten to ten ones.



Take away another four.
There are 26 left.

Repeat with different subtraction stories.

C₂

Materials:
number blocks, place
value table

Let the children work in groups of four.

Give each group a set of number blocks containing five tens and twenty ones.

Write $34 - 6$ on the blackboard.

Ask each group to do the subtraction $34 - 6$, using number blocks.
First they make 34. Then they change a ten to make $20 + 14$.
They take away 6.

The first group to raise their hands and give the correct answer,
28, wins one point.

Play again with a different sum, such as $28 - 7$ or $53 - 9$.
Repeat until each group is familiar with the process of trading.

T₂

Let the children sit at the front of the class so that they can all see. Use number blocks to demonstrate.

Show two tens and six ones.

Ask, "What number is this?"

Ask one of the children to write the number 26 on the blackboard.

26

Show one ten and sixteen ones.

Ask, "What number is this?"

Encourage the children to answer, "One ten and sixteen ones," or "twenty six."

10+16

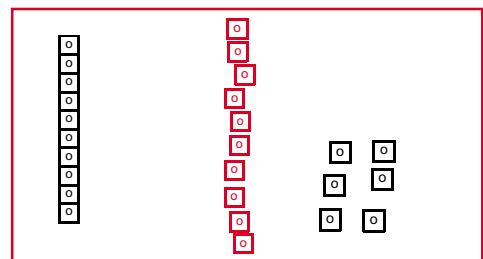
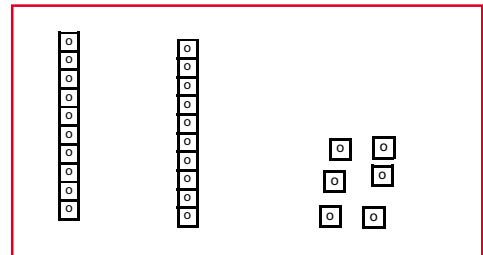
Write 10 + 16 and 26 on the blackboard.

Ask, "Which is greater?" "They are both the same."

Ask, "Which is bigger?"

34 or 20 + 14
27 or 10 + 19
35 or 30 + 14 etc.

Materials:
number blocks, cloth board



C₂

Copy these addition sentences on the blackboard.

Ask the children to copy each sentence and fill in the missing numbers.

$$25 = 20 + \square$$

$$31 = 30 + \square$$

$$54 = \square + 4$$

$$19 = \square + 9$$

$$28 = \square + 18$$

$$27 = 10 + \square$$

$$34 = 20 + \square$$

$$41 = 30 + \square$$

$$53 = 40 + \square$$

$$\square = 30 + 18$$

Make up more examples for extra practice.

Materials:
blackboard,
children's exercise
books

Unit 6

T₂

Materials:
blackboard

Show the subtraction $34 - 8$ on the blackboard, stage by stage.

| | | | | |
|--|---|---|---|---|
| $\begin{array}{r} 34 \\ - 8 \\ \hline \end{array}$ <p>1. There are not enough ones to take away 8.</p> | $\begin{array}{r} 10 \\ \cancel{2} \quad 34 \\ - 8 \\ \hline \end{array}$ <p>2. Change a ten for ten ones. There are two tens left.</p> | $\begin{array}{r} 2 \quad 14 \\ \cancel{2} \quad \cancel{3} \quad 4 \\ - 8 \\ \hline \end{array}$ <p>3. There are 14 ones altogether.</p> | $\begin{array}{r} 2 \quad 14 \\ \cancel{2} \quad \cancel{3} \quad \cancel{4} \\ - 8 \\ \hline 6 \end{array}$ <p>4. 14 take away 8 leaves 6.</p> | $\begin{array}{r} 2 \quad 14 \\ \cancel{2} \quad \cancel{3} \quad \cancel{4} \\ - 8 \\ \hline 26 \end{array}$ <p>5. Two tens take away nothing leaves two tens.</p> |
|--|---|---|---|---|

Show other subtractions.

$$\begin{array}{r} 36 \\ - 8 \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ - 7 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 51 \\ - 5 \\ \hline \end{array}$$

C₂

Materials:
children's resource book,
pages 24 & 25,
number blocks

Ask the children to complete the activities in their resource book pages 24 and 25.
The children must use number blocks in order to develop an understanding of the process of trading.

Unit 6. Number

Use number blocks to help you do these subtraction sums. Write the answers in your exercise book.

Example. 1. Make 34. Take away 5. How many left?

$$\begin{array}{r} 2 \quad 14 \\ \cancel{2} \quad 34 \\ - 5 \\ \hline 29 \end{array}$$

| | |
|---|---|
| 1. Make 34. Take away 5. How many left? | 2. Make 23. Take away 6. How many left? |
| 3. Make 27. Take away 8. How many left? | 4. Make 32. Take away 4. How many left? |
| 5. Make 26. Take away 9. How many left? | 6. Make 35. Take away 7. How many left? |

Use number blocks to do these subtraction sums.

| | | | | |
|--|--|--|--|--|
| 7. $\begin{array}{r} 32 \\ - 7 \\ \hline \end{array}$ | 8. $\begin{array}{r} 41 \\ - 9 \\ \hline \end{array}$ | 9. $\begin{array}{r} 26 \\ - 8 \\ \hline \end{array}$ | 10. $\begin{array}{r} 43 \\ - 6 \\ \hline \end{array}$ | 11. $\begin{array}{r} 24 \\ - 7 \\ \hline \end{array}$ |
| 12. $\begin{array}{r} 35 \\ - 9 \\ \hline \end{array}$ | 13. $\begin{array}{r} 42 \\ - 6 \\ \hline \end{array}$ | 14. $\begin{array}{r} 31 \\ - 5 \\ \hline \end{array}$ | 15. $\begin{array}{r} 43 \\ - 4 \\ \hline \end{array}$ | 16. $\begin{array}{r} 27 \\ - 9 \\ \hline \end{array}$ |

Number. Unit 6

Kakamora's Island Map

Where on the island does the Kakamora live?

Find the answer to each sum. Change each number to a letter, using the table below. For example, if the answer is 6, change it to letter f.

| | | | | | | | |
|---------|---------|---------|---------|---------|---------|---------|---------|
| 1 = a, | 2 = b, | 3 = c, | 4 = d, | 5 = e, | 6 = f, | 7 = g, | 8 = h, |
| 9 = i, | 10 = j, | 11 = k, | 12 = l, | 13 = m, | 14 = n, | 15 = o, | 16 = p, |
| 17 = q, | 18 = r, | 19 = s, | 20 = t, | 21 = u, | 22 = v, | 23 = w, | 24 = x, |
| 25 = y, | 26 = z. | | | | | | |

| | | | | |
|---|--|---|--|--|
| 1. $\begin{array}{r} 23 \\ - 8 \\ \hline \end{array}$ | 2. $\begin{array}{r} 31 \\ - 19 \\ \hline \end{array}$ | 3. $\begin{array}{r} 12 \\ - 8 \\ \hline \end{array}$ | 4. $\begin{array}{r} 51 \\ - 29 \\ \hline \end{array}$ | 5. $\begin{array}{r} 36 \\ - 27 \\ \hline \end{array}$ |
|---|--|---|--|--|

T₂

Teach the children to play 'The Trading Game'.

Let the children sit at the front of the class so that they can all see. Pick four children to play the game.

Give three children 123 in number blocks each (1 hundred, 2 tens, 3 ones).

Give the other child 30 tens and 30 ones. They are the bank.

The first three children place their number blocks on their place value charts.

They spin the spinner, take away that number of blocks and give them to the bank.

If they spin 4, 5 or 6 they must trade a ten for ten ones.

Later they must trade a hundred for ten tens.

The game continues until one child has given all their blocks to the bank.

Materials:
dice or spinner,
number blocks,
place value chart

C₂

Let the children play the trading game in groups of four.

One child is the bank. They take 30 tens and 30 ones.

The other children each take 1 hundred, 2 tens and 3 ones.

The children take turns to throw the dice or spin the spinner. They take away the number of blocks shown on the dice or spinner and give them to the bank.

If they need to trade, they trade with the bank.

The first child to give all their number blocks to the bank wins the game.

Materials:
dice or spinner,
number blocks,
place value chart

Unit 6

T₂

Materials:
blackboard

Show the subtraction $145 - 27$ step by step on the blackboard.

$$\begin{array}{r} 145 \\ - 27 \\ \hline \end{array}$$

1. Start with the ones. There are not enough ones to take away 7.

$$\begin{array}{r} \overset{10}{\cancel{3}} \quad \overset{3}{\cancel{1}} \quad 4 \quad 5 \\ - 27 \\ \hline \end{array}$$

2. Change a ten for ten ones. There are three tens left.

$$\begin{array}{r} \overset{3}{\cancel{1}} \quad \overset{15}{\cancel{4}} \quad 5 \\ - 27 \\ \hline \end{array}$$

3. There are 15 ones altogether.

$$\begin{array}{r} \overset{3}{\cancel{1}} \quad \overset{15}{\cancel{4}} \quad 5 \\ - 27 \\ \hline \end{array}$$

4. 15 ones take away 7 ones leaves 8 ones.

$$\begin{array}{r} \overset{3}{\cancel{1}} \quad \overset{15}{\cancel{4}} \quad 5 \\ - 27 \\ \hline \end{array}$$

5. 3 tens take away 2 tens leaves 1 ten. 1 hundred take away 0 leaves 1 hundred.

Demonstrate other subtractions.

$$\begin{array}{r} 153 \\ - 18 \\ \hline \end{array}$$

$$\begin{array}{r} 131 \\ - 15 \\ \hline \end{array}$$

$$\begin{array}{r} 256 \\ - 28 \\ \hline \end{array}$$

$$\begin{array}{r} 142 \\ - 25 \\ \hline \end{array}$$

C₂

Materials:
children's resource
book, page 26

Ask the children to find the answers to the subtraction sums on page 26.
of their resource book.

Let the children use number blocks to help them understand the process of trading.

Unit 6. Number

Use number blocks to help you do these subtraction sums. Write the answers in your exercise book.

Example.

1. How many litres are left in the big tank?

3 14

1. $\begin{array}{r} 3 \quad 14 \\ - 2 \quad 5 \\ \hline 1 \quad 9 \end{array}$

2. Class Three take 29 pencils. How many pencils are left?

96

Class 3
29 pencils

3. How many children are at school today?

Kikole School

Total Number of children 134

Absent today 16

4. How much does the bicycle cost now?

Sale today.
\$129 off.

\$535

Use number blocks to do these subtraction sums.

5. $\begin{array}{r} 146 \\ - 122 \\ \hline \end{array}$

6. $\begin{array}{r} 245 \\ - 134 \\ \hline \end{array}$

7. $\begin{array}{r} 264 \\ - 100 \\ \hline \end{array}$

8. $\begin{array}{r} 538 \\ - 215 \\ \hline \end{array}$

T₂

Tell a subtraction story, for example,

"Mr. Bamboo had 238 nails in his tool box.

He used 45 to build a house. How many nails were left?"

Show the subtraction, step by step. Ask questions about the steps.

Materials:
blackboard

| | | | | |
|--|---|--|---|--|
| $\begin{array}{r} 238 \\ - 45 \\ \hline \end{array}$ | $\begin{array}{r} 238 \\ - 45 \\ \hline 3 \end{array}$ | $\begin{array}{r} 1 \quad 10 \\ \cancel{2} \quad \cancel{3} \quad 8 \\ - 45 \\ \hline 3 \end{array}$ | $\begin{array}{r} 1 \quad 13 \\ \cancel{2} \quad \cancel{3} \quad 8 \\ - 45 \\ \hline 93 \end{array}$ | $\begin{array}{r} 1 \quad 13 \\ \cancel{2} \quad \cancel{3} \quad 8 \\ - 45 \\ \hline 193 \end{array}$ |
| <p>1. What do I do first?
Can I take 5 from 8?
What is left?</p> | <p>2. What do I do next?
Can I take 4 tens from 3 tens?</p> | <p>3. I change a hundred for ten tens. How many tens are there now?</p> | <p>4. How many tens are there?
Can I take away 4 from 13?
How many are left?</p> | <p>5. How many hundreds are there?
I don't take away any hundreds.
How many are left?</p> |

Repeat with other stories such as,

"Mary planted 135 cassava sticks. 43 died. How many were left?"

John's exercise book has 156 pages. He has written on 64.

How many are left?"

C₂

Ask the children to complete the subtraction exercises in their resource book, pages 27 and 28.

They write the subtraction sums and answers in their exercise books.

Materials:
children's resource book, pages 27 & 28

Unit 6. Number

Complete these subtraction sums with trading in the tens and hundreds.

Example:

$$\begin{array}{r} 215 \\ - 117 \\ \hline 218 \end{array}$$

Write the sums and answers in your exercise book.

| | | | |
|--|---|---|---|
| 1. $\begin{array}{r} 335 \\ - 117 \\ \hline \end{array}$ | 2. $\begin{array}{r} 346 \\ - 128 \\ \hline \end{array}$ | 3. $\begin{array}{r} 265 \\ - 137 \\ \hline \end{array}$ | 4. $\begin{array}{r} 253 \\ - 115 \\ \hline \end{array}$ |
| 5. $\begin{array}{r} 313 \\ - 42 \\ \hline \end{array}$ | 6. $\begin{array}{r} 245 \\ - 52 \\ \hline \end{array}$ | 7. $\begin{array}{r} 173 \\ - 26 \\ \hline \end{array}$ | 8. $\begin{array}{r} 137 \\ - 85 \\ \hline \end{array}$ |
| 9. $\begin{array}{r} 435 \\ - 173 \\ \hline \end{array}$ | 10. $\begin{array}{r} 538 \\ - 165 \\ \hline \end{array}$ | 11. $\begin{array}{r} 659 \\ - 367 \\ \hline \end{array}$ | 12. $\begin{array}{r} 348 \\ - 185 \\ \hline \end{array}$ |

13. There were 136 pineapples at the market. 82 were sold. How many were left?

14. There were 253 pumpkins in a garden. 160 were picked one day. How many were left?

Unit 6. Number

The store is having a big sale. Find the new price of each thing by subtracting. Use number blocks. Write the answers in your exercise book.

Example:

1. $\begin{array}{r} 215 \\ - 9 \\ \hline 26 \end{array}$ Sale today. \$9 off.

2. $\begin{array}{r} 139 \\ - 55 \\ \hline \end{array}$ Sale today. \$55 off.

3. $\begin{array}{r} 65 \\ - 18 \\ \hline \end{array}$ Sale today. \$18 off.

4. $\begin{array}{r} 565 \\ - 170 \\ \hline \end{array}$ Sale today. \$170 off.



Can all the children subtract three digit numbers with trading in the tens and hundreds?

T₃

Materials:
blackboard

Demonstrate some subtraction problems on the blackboard.
Include problems with zero in the tens and hundreds, for example

$$\begin{array}{r} 230 \\ - 36 \\ \hline \end{array}$$

$$\begin{array}{r} \overset{2}{\cancel{2}}\overset{10}{\cancel{3}}0 \\ - 36 \\ \hline 4 \end{array}$$

$$\begin{array}{r} \overset{1}{\cancel{2}}\overset{12}{\cancel{3}}\overset{10}{\cancel{0}} \\ - 36 \\ \hline 194 \end{array}$$

$$\begin{array}{r} 308 \\ - 25 \\ \hline \end{array}$$

$$\begin{array}{r} 308 \\ - 25 \\ \hline 3 \end{array}$$

$$\begin{array}{r} \overset{2}{\cancel{3}}\overset{10}{\cancel{0}}8 \\ - 25 \\ \hline 283 \end{array}$$

Ask questions to encourage the children to join in and complete the subtraction sums.

Repeat with more examples of subtraction with zero in the tens and hundreds.

C₃

Materials:
children's resource
book, page 29

Ask the children to complete the subtraction activities on page 29 of their resource book.

Monitor the children as they work.

Make sure the children can trade from the tens or hundreds when necessary.

Number. Unit 6

Example.
Find the correct change by subtracting. Write the sums and answers in your exercise book.

I have \$50
\$35

1. $\begin{array}{r} 4 \ 10 \\ \cancel{3} \ 0 \\ - \cancel{3} \ 5 \\ \hline 1 \ 5 \end{array}$

2. I have \$150
\$139

3. I have \$80
\$65

4. I have \$805
\$565

5. I have \$50
\$45

6. I have \$205
\$135

7. I have \$240
\$225

8. I have \$205
\$135



Can all the children solve subtraction problems with three digit numbers including numbers with zero in the tens and ones?

Extra activities Support

Help the children to develop an understanding of number bonds by practising subtraction of single digit numbers from ten and from 20. Play games such as Bingo to help with this.

Help the children to understand the concept of trading in subtraction by practising more examples of subtraction of two and then three digit numbers with trading in the tens and hundreds, using number blocks.

Repeat some of the activities and games from this unit using number blocks, such as Bingo and 'The Trading Game'.

Materials:
children's resource
books, exercise
books, number blocks

Extra activities Extension

Make a set of cards with these numbers on.

| | | | | | | | |
|-----|-----|----|-----|-----|----|-----|-----|
| 116 | 10 | 89 | 56 | 23 | 64 | 242 | 147 |
| 85 | 106 | 7 | 108 | 184 | 35 | 52 | 94 |

Materials:
sets of cards made
from scrap card from
the store,
children's exercise
books

The children play a game in groups of three.

They take turns to pick a card, such as 89.

They write down and subtract the number on their card from 999. For example,

$$\begin{array}{r} 999 \\ - 89 \\ \hline 910 \end{array}$$

They then pick another card, such as 35. This time they subtract 35 from 910.

$$\begin{array}{r} 8 \quad 10 \quad 10 \\ \cancel{9} \quad \cancel{1} \quad 0 \\ - 35 \\ \hline 875 \end{array}$$

They continue picking and subtracting until the winner reaches zero or less.

Unit 7

Measurement topic 22: Area of Simple Shapes

Aim:

to enable the children to find and compare areas of simple shapes by counting squares

Sequence of objectives:

1. to teach the children to find the area of shapes on square grids by counting
2. to teach the children to make different shapes, all with the same area
3. to teach the children to recognise square centimetres

In Standard Two the children were introduced to the concept of area and compared surfaces using non-standard units such as stones, shells and leaves. In this unit the children use squares to measure areas more accurately. It will be helpful if the children have exercise books containing squared paper.

T₁

Materials:

a set of cut-out shapes such as squares, rectangles, triangles and circles, scissors, chart paper

Prepare some large cut-out squares, rectangles, triangles and circles. Draw some large shapes on pieces of chart paper. Let the children sit on mats at the front of the classroom so that they can all see.

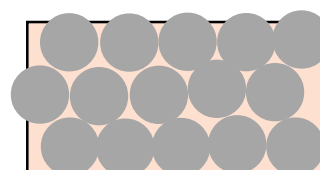
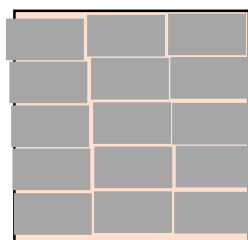
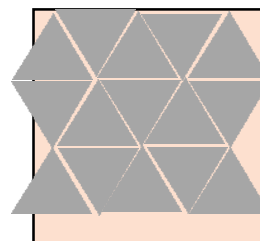
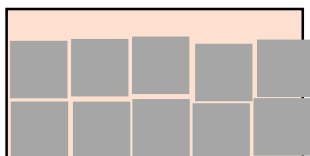
Ask the children to look at the shapes.

Remind them of words like 'space' and 'area', and of the leaves, shells and cans they used to measure the area of shapes in Standard 2.

Show the children the cut-out squares, rectangles, triangles and circles. Ask,

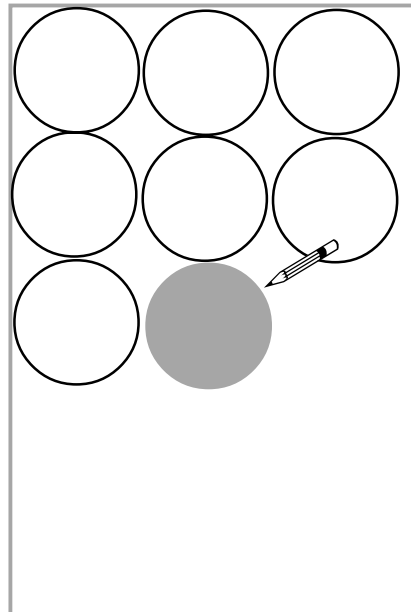
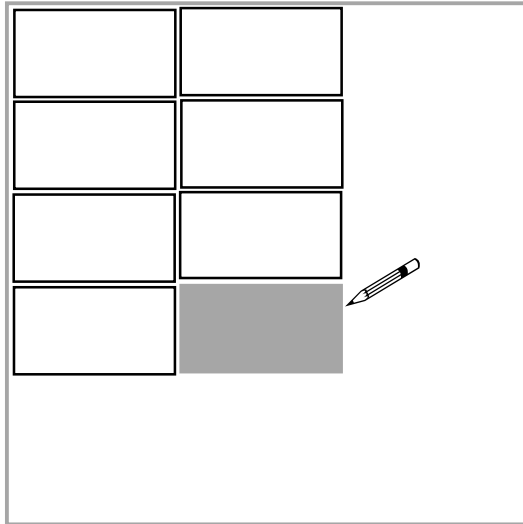
"Which shape will be best for covering the large shapes?"

Let different children use the cut-out shapes to cover the large shapes.





Let the children work in groups of 4 or 5.
Ask the children to draw some large shapes of their own.
Let them fill the large shapes by drawing round cut-out shapes such as squares, rectangles, triangles and circles.



Materials:
a set of cut-out shapes
such as squares,
rectangles, triangles
and circles, pencils,
paper

When the children have finished, ask questions such as,
"How many rectangles covered the piece of paper?"
Which shapes leave the most gaps?
Which shapes fit together best?
Which shapes are best for measuring areas?" etc.

T₁

Materials:
a leaf mat, sticks or
pieces of string

Use a leaf mat that has been woven so it has a pattern of squares.

Let the children sit around the mat so that they can all see.

Use some sticks or pieces of string to make simple shapes on the mat.



Ask the children to tell you how many squares are inside each shape.

Encourage them to use phrases such as:

"This shape has an area of 10 squares," etc.

C₁

Materials:
a leaf mat, sticks or
pieces of string

Divide the children into groups of 4 or 5 and let each group use the mat and some sticks to make shapes, while the rest of the class are doing some quiet work.

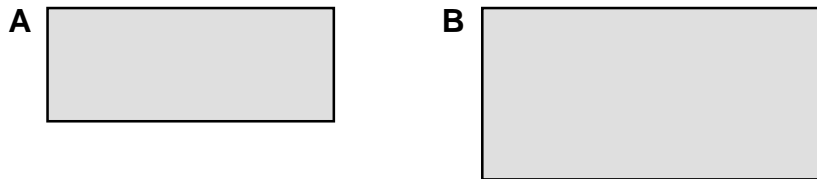
Ask them to count the number of squares in each of the shapes they make.

Monitor each group and check that they are counting the squares accurately.

Encourage the children to make the biggest shape they can.

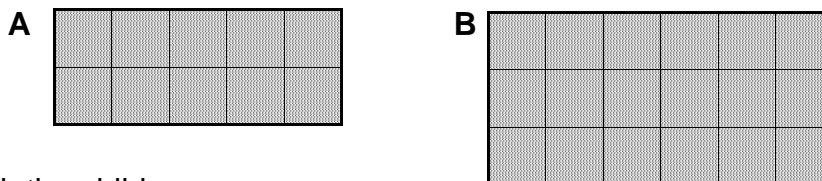
T₁

Draw two different shapes on the blackboard, for example:



Ask the children which is bigger, shape A or shape B.
Remind the children of words like 'area' and 'space'. Say,
"Shape B has a bigger area than shape A." Or
"Shape B covers more space than shape A."
Ask the children how they would measure the area of the shapes.

Show the children how to divide the shapes into squares of the same size:



Ask the children,
"How many squares are in shape A?"
"How many squares are in shape B?"
Point to each shape and count the squares with the children. Say,
"Shape A has an area of 10 squares."
"Shape B has an area of 18 squares."

Materials:
blackboard, chalk

C₁

Ask the children to look at page 30 of the children's resource book. Ask,
"What is the area of shape 1?"
The children should answer, **6 squares**.
Ask the children to record this in their books:-

Shape 1 - 6 squares

Let the children repeat this for all the shapes on page 30.

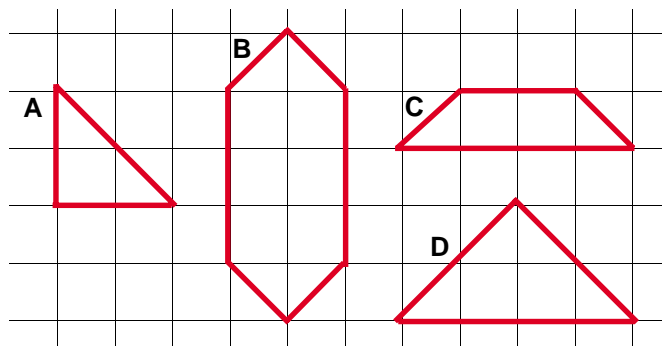
Materials:
children's resource
book, page 30

When the children have found the area of all the shapes, ask questions such as,
"Which shape has the biggest area?"
"Which shape has the smallest area?"
"Which two shapes have the same area?"
"Which shape is one square bigger than shape 3?"
"Which shape is two squares smaller than shape 7?" etc.

T₁

Materials:
blackboard, chalk

Draw some shapes on a square grid on the blackboard, for example:



Point to shape A. Ask the children to count the whole squares first. Point to the two half squares and show the children that these add together to make a whole square. So the area of shape A is one whole square and two halves, i.e. 2 squares.

Point to the other shapes and let the children find the area of each one using the same method. Encourage them to count the whole squares first and then find pairs of half squares that can be added to make a whole square.

C₁

Materials:
children's resource
book, page 31

Ask the children to turn to page 31 of the children's resource book.

Ask

"What is the area of shape 1?"

The children should answer:-

8 squares

Remind the children to count the whole squares first, and then add the two half squares to make another whole square.

Ask the children to record this in their exercise books:

Shape 1 - 8 squares

Let the children repeat this for all the shapes on page?

When the children have found the area of all the shapes, ask questions such as,

"Which shape has the biggest area?"

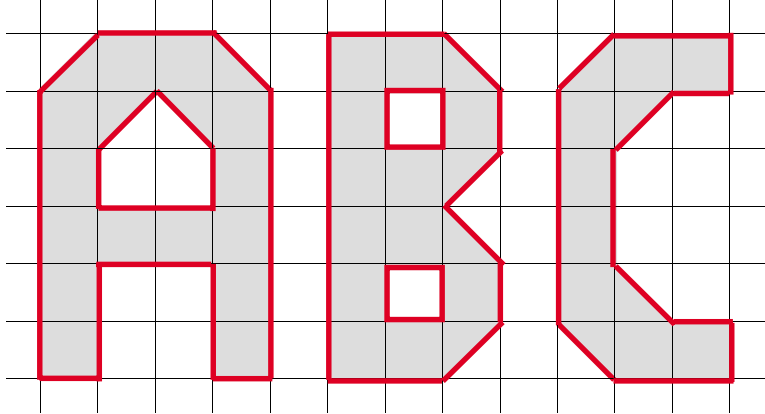
How much bigger is shape 3 than shape 2?

Which shape is one square smaller than shape 5?

How many shapes have an area of 8 squares?" etc.

T₁

Draw a square grid on the blackboard and draw some capital letters using whole and half squares:



Show the children how to find the area of each letter by counting the whole and half-squares.

For example, in the letter 'A' there are 14 whole squares and 4 half squares, so the total is 16 squares.

Ask,

"What is the area of the letter 'B'?"

Which letter has the biggest area?

Which letter has the smallest area?" etc.

Materials:
blackboard, chalk

C₁

Let the children draw the first letter of their own name on squared paper, using whole and half-squares.

Ask them to find the area of their letter.

Let the children colour their letters and use their work to make a display.

Materials:
squared paper,
rulers,
coloured pencils or
crayons

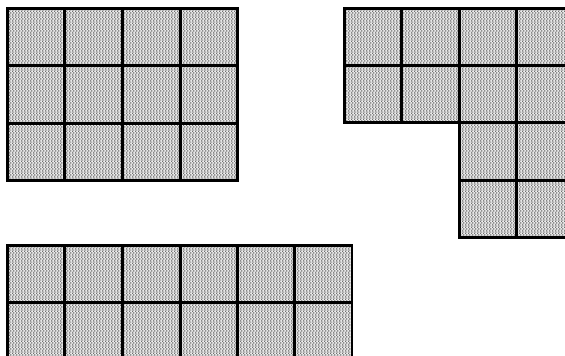


Can all the children find the area of shapes on square grids by counting?

T₂

Materials:
blackboard, chalk

Draw the following shapes on the blackboard.
Ask the children to look at the three shapes and tell you what they can see. Ask,
"What is the same about all three shapes?"
The children should be able to tell you that all three shapes have the same area, i.e. **12 squares**.

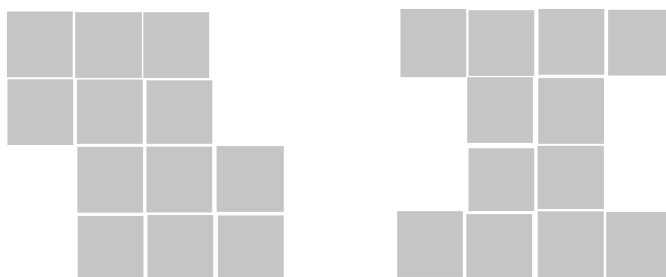


Point to each shape and show the children that, although the shapes are different, each one covers the same area.

C₂

Materials:
cut-out squares,
squared paper

Prepare some cut-out squares of the same size for the children to use in groups of 3 or 4. Each group will need 12 squares.
Ask each group to make different shapes using the 12 squares.

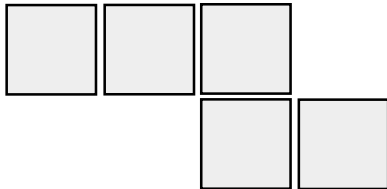


The children should record each shape they make by drawing it on squared paper.

Let them make three or four different shapes, each with an area of 12 squares.
Check to see that all the shapes are different.

T₂

Let the children sit on mats at the front of the classroom so that they can all see. Arrange 5 large cut-out squares on the floor to make a shape that has an area of 5 squares, for example:



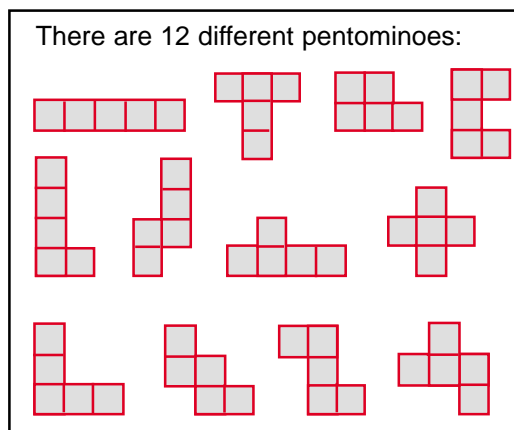
Let different children rearrange the squares to make other shapes with an area of five squares. See how many different shapes the children can find.

(Shapes made from 5 squares like this are called 'pentominoes').

Materials:
large cut-out squares

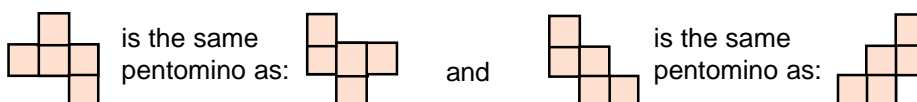
C₂

Divide the children into groups of 3 or 4. Give each group a set of cut-out squares of the same size. Let each group find as many different pentominoes as they can. Each time they find a different one they should draw round the shape on a piece of paper. See which group can find the most.



Materials:
cut-out squares, paper, pencils, coloured pencils, crayons or paints

Some groups may find 'different' pentominoes, that are really the same pentomino turned over or turned around. For example:



Let the children colour or paint the pentominoes they make. Use them to make a display in the classroom.



Can all the children make different shapes which have the same area?

T₃

Materials:

squared paper with centimetre squares or page 30 or 31 of the children's resource book, rulers

Give out some sheets of squared paper with centimetre squares, so that each child can see a sheet, or ask the children to look at the squares on page 30 or 31 of the children's resource book. Ask the children to look carefully at one of the squares and measure it accurately using a centimetre ruler. Ask the children to measure each side of the square. Check that they are using the ruler correctly.

Ask,

"How long is each side of the square?"

The children should answer, "**One centimetre.**"

Explain that a square with sides of one centimetre is called a *square centimetre*.

Show the children that there is a short way of writing this: **cm²**

A square centimetre is a standard unit for measuring the area of small shapes and objects.

C₃

Materials:

children's resource book, page 30

Ask the children to look again at page 30 of the children's resource book. Remind the children that the squares on this page are *square centimetres*.

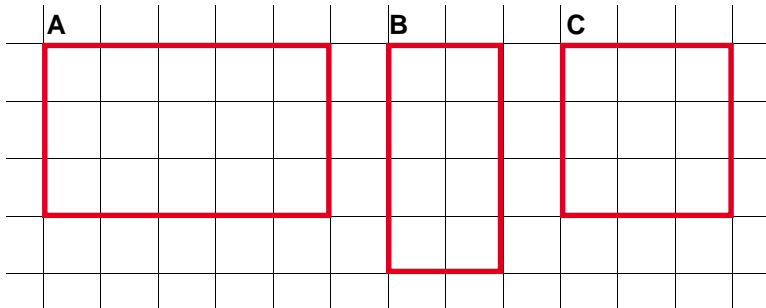
Let the children look again at the first 6 shapes on this page (shapes 1 - 6).

Ask them to find the area of each shape and record their answers in a table, using square centimetres or cm².

| Shape | Area |
|-------|--------------------|
| 1 | 6 cm ² |
| 2 | 20 cm ² |
| etc. | |

T₃

Draw a square grid on the blackboard and some simple shapes, for example,

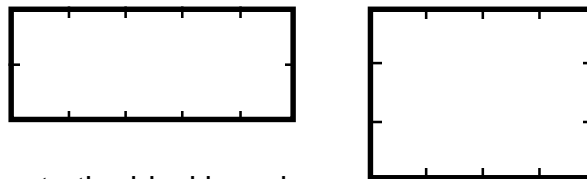


Ask the children to imagine that the squares are square centimetres. Point to shape 'A' and ask the children to tell you the area of this rectangle, i.e. **15 square centimetres**.

Repeat this for the other shapes.

Now draw other shapes but without a grid, for example:

Show the children how to draw squares inside each shape to find the area.



Let different children come to the blackboard and complete the lines to find the area of each shape.

The children should be able to see that the area of the first shape is **10 cm²** and the second **12 cm²**.

Materials:
blackboard, chalk

C₃

Ask the children to turn to page 32 of the children's resource book. Ask them to look at shape 1 and copy it carefully into their exercise books. Let them draw squares inside the rectangle and count the squares to find the area of the shape, i.e. **12 cm²**. Let the children repeat this for each shape on the page and record their results each time:-

Shape 1 - 12 cm²
Shape 2 - 18 cm²
Shape 3 - 16 cm² etc.

For shapes 9 and 10, the children must first accurately measure the sides of the shapes, before drawing them in their books and dividing them into square centimetres.

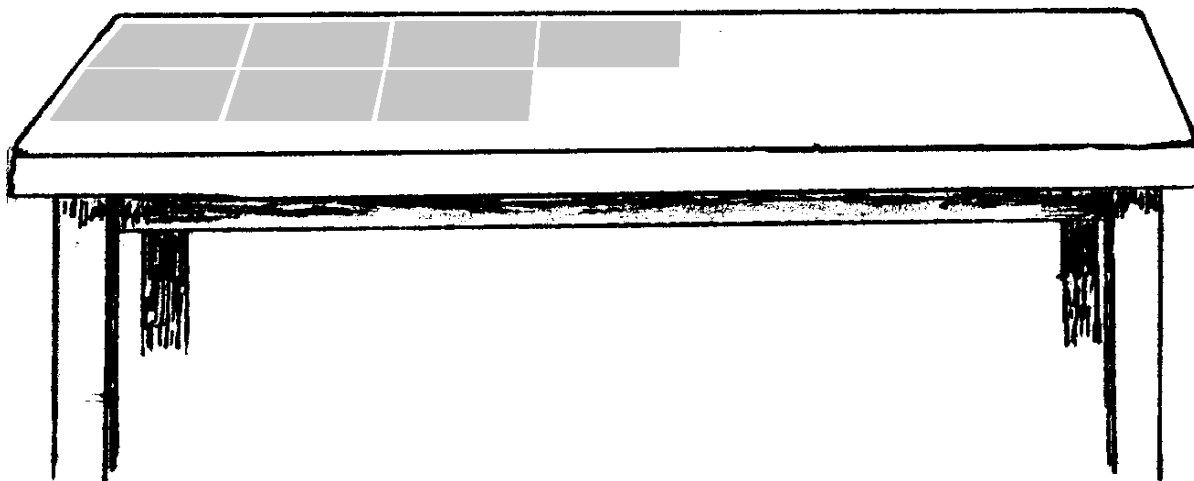
Materials:
children's resource book, page 32



Can all the children recognise and use square centimetres?

Materials:
large cut-out squares
and rectangles

Prepare some large cut-out squares and rectangles for the children to use in small groups.
Let the children use the squares to measure the area of classroom objects, such as the top of a table, an area of the floor or a leaf mat.



Let the children use the cut-out shapes to measure the area of different objects. Ask them to record their results in their books, for example,

| | | | |
|-------|---|------------|------|
| table | - | 18 squares | |
| mat | - | 20 squares | etc. |

Ask questions such as,
*"How many squares did you need to cover the table?
How many did you need to cover the mat?
Which has the biggest area, the table or the mat?" etc.*

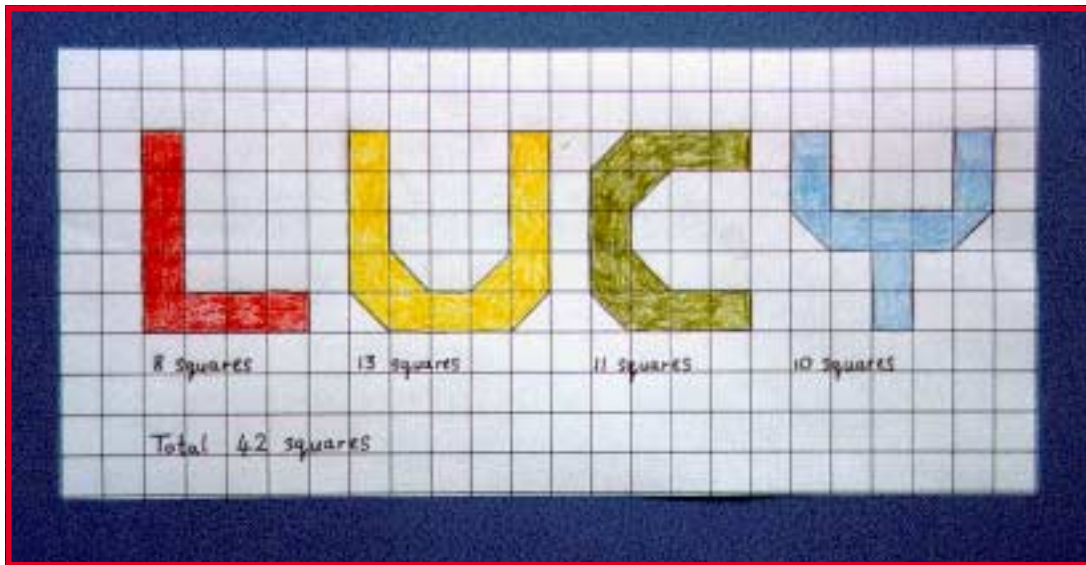
Extra activities**Extension**

Let the children write the letters of their name on squared paper. They must use only whole and half squares.

Ask them to find the area of each letter by counting the whole and half squares, and then add together the area of each letter to find the area of their whole name.

Let the children colour their names and use their work to make a display.

Materials:
squared paper,
rulers, coloured
pencils or crayons



Unit 8

Number Topic 8: Mental addition and subtraction

Aim:

to teach useful number facts and practise methods in mental addition and subtraction

Sequence of objectives:

1. to memorise and practise useful addition and subtraction facts and processes.

In this unit the children learn useful addition and subtraction facts such as number bonds which make ten.

They learn simple step by step ways to do mental addition and subtraction sums and problems, such as adding the tens first and then the ones ($27 + 15 = 27 + 10 + 5$).

T₁

Materials:

cards,
children's exercise
books

Play addition and subtraction bingo to revise number bonds up to ten.

Ask the children to make a bingo card with four squares.

Ask them to pick any four numbers from 0 to 9 and write one in each square.

| | |
|---|---|
| 2 | 8 |
| 6 | 3 |

Write addition and subtraction sums, each with a ten number bond, on cards:

Ten minus one.

Four add six.

Ten take away six.

Two add eight.

There are ten fish. Two swim away. How many are left?

Five and five.

I had ten pencils. I gave away seven. How many are left?

One plus nine.

Ten minus five.

Three add seven."

Mix the cards. Call out the addition and subtraction sums slowly one by one.

If the children have the answer on their bingo card they tick it. The first child to tick all four answers shouts, '**Bingo**'.

Play again and let the winner call out the questions.



The children play an addition game in pairs.

They sit facing each other.

They each put their hands behind their back.

They count together, "**One, two, three.**"

After three, they each bring their hands to the front and show a number of fingers, such as 5 and 8.

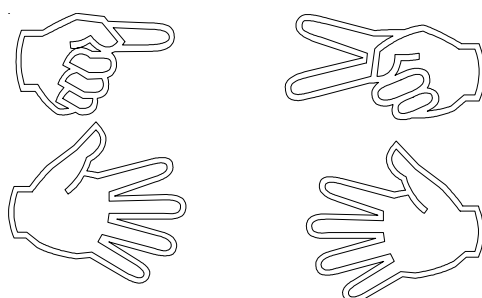
They must add the two numbers together.

The first child to say the correct answer wins one point.

The first to get ten points wins the game.

This game can also be played using two sets of cards 0 - 10.

Materials:
number cards 0-10

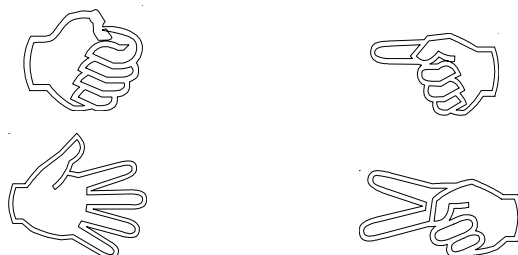


$$6 + 7 = 13$$

Repeat the game.

This time, subtract the smaller number from the larger.

The first child to get ten points wins the game.



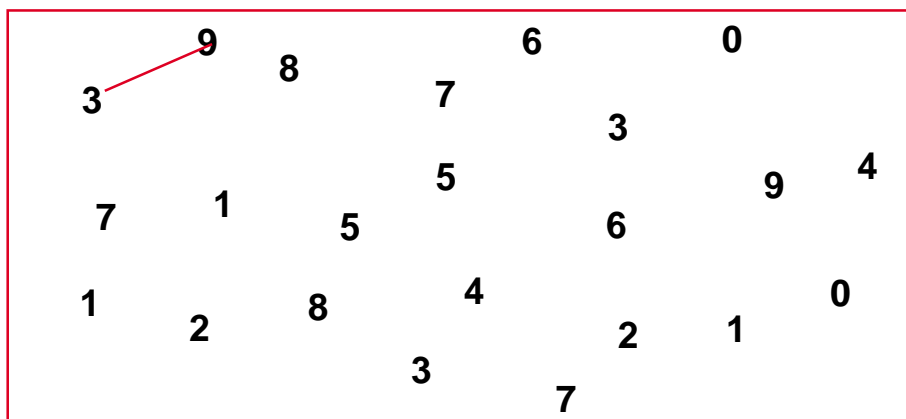
$$5 - 3 = 2$$

Unit 8

T₁

Materials:
blackboard, small
paper squares, shells
or bottle tops

Write a mixed selection of numbers from 0 to 9 on the blackboard.



Join two numbers, such as 9 and 3, with a line.
The children must subtract the smaller from the larger number.
When a child has the answer they raise their hand.

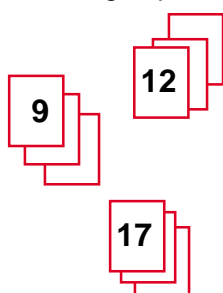
Give the class time to think then ask the child who raised their hand first to give the answer, "**Six**".
Write the subtraction sentence on the blackboard $9 - 3 = 6$.
Six is the correct answer so give the child a paper square, shell or bottle top.
If the answer is wrong, ask the child who was second to raise their hand.

Join two more numbers and ask the children to add them this time.

Repeat until all the numbers have been joined.
The child who has most squares, shells or bottle tops wins.

C₁

Materials:
3 sets of cards 0-10
for each group



The children play in groups of three.
They take one set of cards each and hold them face down.
The children count, "**One, two, three.**"
On "**three**" they each turn over their top cards.

They race to **subtract** the smallest number from the biggest.
 $17 - 9 = 8$

The first to answer correctly wins one point.
The first to get ten points wins the game.

After a while, let the children swap groups and play again.
Now they must **add** the smallest and largest numbers.

T₁

Write a mixed selection numbers from 0 to 18 on the blackboard.



Materials:

blackboard, paper squares, shells or bottle tops

Join any two numbers, such as 13 and 18 with a line.
The children must subtract the smaller from the larger number.
When a child has the answer they raise their hand.

Give the class time to think then ask the child who raised their hand first to give the answer, **"Five"**.

Write the subtraction sentence on the blackboard $18 - 13 = 5$.
Five is the correct answer so give the child a paper square, shell or bottle top.

If the answer is wrong, ask another child to answer.

Join two more numbers and ask the children to add them this time.

Repeat until all the numbers have been joined.

The child who has most squares, shells or bottle tops wins.

C₁

The children work in pairs.

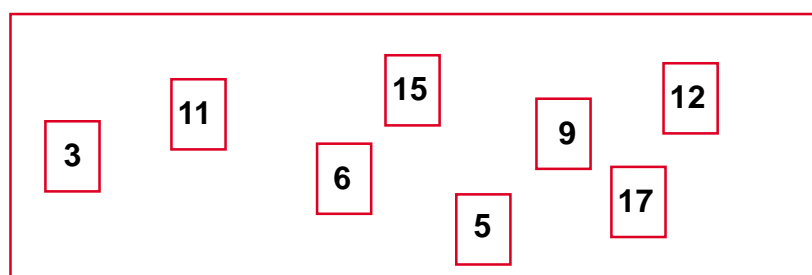
They place all the number cards face up.

Next they take turns to pick any two cards which add or subtract to make **5**. They then say the addition or subtraction sentence.

For example,



"13 take away 8 equals 5."



Materials:

number cards, 0 - 18

When a player makes five they keep their cards.

The player with most cards at the end wins the game.

Play again to make **8, 4, 9** etc.

Unit 8

T₁

Materials:
blackboard

Ask the children to tell you the numbers which add together to make ten. Write them on the blackboard.

$$0 + 10 \quad 1 + 9 \quad 2 + 8 \quad 3 + 7 \quad 4 + 6 \quad 5 + 5$$

Now write some addition sums with four or five numbers. For example,

$$6 + 3 + 4 + 2$$

Tell the children that the easiest way to add the numbers is to find two which make ten and add them first.

| | |
|-----------|---------------|
| First add | $6 + 4 = 10$ |
| Then add | $3 + 2 = 5$ |
| Then add | $10 + 5 = 15$ |

Repeat with more examples, such as,

| | |
|---------------------|---------------------|
| $7 + 1 + 6 + 3$ | $5 + 2 + 4 + 5$ |
| $3 + 6 + 2 + 7$ | $8 + 4 + 2 + 3$ |
| $5 + 1 + 3 + 2 + 5$ | $1 + 3 + 7 + 9 + 2$ |

C₁

Materials:
children's resource
book, page 34

The children complete the activities in their resource book, page 34.

Unit 8. Number

Practice working these addition sums in your head. Write the answers in your exercise book.

Example:

1. $4 + 3 + 6 + 2$

1. 15

Add 6 + 4 first to make 10. Then add on 3 + 2.

First add the two numbers which make ten. How many sums can you do in three minutes?

| | |
|----------------------|---------------------|
| 1. $4 + 3 + 6 + 2$ | 2. $2 + 0 + 5 + 8$ |
| 3. $5 + 1 + 5 + 4$ | 4. $7 + 6 + 2 + 3$ |
| 5. $3 + 2 + 7 + 5$ | 6. $5 + 1 + 3 + 7$ |
| 7. $6 + 1 + 5 + 4$ | 8. $6 + 6 + 4 + 2$ |
| 9. $9 + 3 + 3 + 1$ | 10. $1 + 5 + 9 + 2$ |
| 11. $5 + 0 + 10 + 3$ | 12. $5 + 4 + 3 + 6$ |

Add all the numbers in each box. First add the two numbers which make ten. How many sums can you do in three minutes?

| | | |
|---|---|---|
| 13. <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $5 \quad 3$
 $4 \quad 2 \quad 5$ </div> | 14. <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $6 \quad 3$
 $0 \quad 4 \quad 1$ </div> | 15. <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $3 \quad 5$
 $1 \quad 8 \quad 2$ </div> |
| 16. <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $1 \quad 3$
 $5 \quad 2 \quad 7$ </div> | 17. <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $5 \quad 6$
 $4 \quad 7 \quad 5$ </div> | 18. <div style="border: 1px solid black; padding: 5px; display: inline-block;"> $7 \quad 3$
 $1 \quad 9 \quad 7$ </div> |

Give the children three minutes to complete each activity. Use a classroom clock or watch to time the activities.

The children work out the sums in their heads and write the answers only in their exercise books.

Let the children swap books and mark each other's answers.

After a few days, repeat the activities. Do the children's scores improve?

T₁

Help the children to learn addition and subtraction facts up to 20.

Ask some mental subtraction sums, such as,

13 take away 8.

The children can find the answer by using the addition fact,

$$8 + 5 = 13.$$

Continue asking different sums.

| | |
|------------|-------------|
| $15 - 7 =$ | $12 - 4 =$ |
| $13 - 6 =$ | $18 - 11 =$ |
| $17 - 9 =$ | $17 - 9 =$ |
| $14 - 8 =$ | $16 - 9 =$ |

Materials:
blackboard

C₁

Prepare the Take Away game board and cards from the Nguzu Nguzu Mathematics cards pack. Paste the board to cardboard. Paste the cards to cardboard and cut them out.

The children play the Take Away game in groups of two.

They place the game on a desk and put the question cards face down in the middle.

The children take turns to spin the spinner.
They move their counter around the board.

If they land on a "Q" their partner picks the top question card from the pile and asks the question.

If the answer is correct the child keeps the card.
If it's wrong the card goes back to the bottom of the pile.

The game continues until all the cards have been won.

The player with most cards wins the game.

Materials:
Take Away game
board and cards

Unit 8

T₁

Materials:
blackboard

Revise and practise adding and subtracting 10 from numbers up to 999. The children should do the sums in their heads. For example, write these sums on the blackboard. Ask the children to tell you the answers.

$$140 + 10 \quad 250 + 10 \quad 342 + 10 \quad 617 + 10$$

$$240 - 10 \quad 300 - 10 \quad 542 - 10 \quad 864 - 10$$

If necessary, use a number line to demonstrate the sums.

Now write some sums to practise adding and taking away 20, 30, 40, etc.

$$140 + 20 \quad 250 + 50 \quad 342 + 30 \quad 617 + 40$$

$$240 - 30 \quad 300 - 50 \quad 542 - 20 \quad 864 - 60$$

Continue practising with different sums.

C₁

Materials:
children's resource
book, page 35

The children complete the activities in their resource book, page 35.

Number. Unit 8

Example.

1. a. 140 (130 + 10)
b. 440 (430 + 10)
c.
d.

Add ten to each number in the big circle.

1.

2.

Subtract ten from each number in the big circle.

3.

4.

The children work out the sums in their heads.

They write the answers in their exercise books.

Let the children swap books and mark each other's answers.

After a few days, repeat the activities. Do the children's scores improve?

T₁

Write these addition and subtraction sums on the blackboard.

$$140 + 12 \quad 250 + 15 \quad 342 + 13 \quad 617 + 11$$

$$240 - 15 \quad 300 - 18 \quad 542 - 15 \quad 864 - 17$$

Explain that the sums can be done by first adding or taking away ten, then adding or taking away the ones, for example,

$$140 + 12 \quad \text{First add the ten } 140 + 10 = 150 \\ \text{Next add the two } 150 + 2 = 152$$

Now write some sums to practise adding and taking away 24, 32, 45, etc.

$$140 + 23 \quad 250 + 56 \quad 342 + 17 \quad 617 + 42$$

$$245 - 35 \quad 305 - 51 \quad 546 - 23 \quad 864 - 52$$

Continue practising with different sums.

Materials:
blackboard

C₁

The children complete the activities in their resource book, page 36.

Materials:
children's resource
book, page 36

The children work out the sums in their heads and write the answers only in their exercise books.

Let the children swap books and mark each other's answers.

Number. Unit 8

Example.

1. a. 142 (132 + 10)
b. 144 (134 + 10)
c.
d.

Add ten to each number in the big circle.

1.

2.

Subtract ten from each number in the big circle.

3.

4.

Unit 8

T₁

Materials:
children's exercise
books, bingo question
cards

$$6 \text{ minus } 6 = 0$$

$$0 \text{ add } 1 = 1$$

$$4 \text{ take away } 2 = 2$$

Ask the children to make a 3 x 3 bingo square in their exercise book. Ask them to write any nine numbers between 0 and 30. For example.

player 1

| | | |
|----|----|----|
| 7 | 13 | 0 |
| 15 | 24 | 18 |
| 11 | 3 | 25 |

player 2

| | | |
|----|----|----|
| 16 | 23 | 12 |
| 25 | 2 | 28 |
| 19 | 27 | 7 |

Write the addition and subtraction sums below on cards. Mix up the cards and read the sums out one by one. Give the children time to work out the answers in their heads. If they have the answer on their bingo card they put a tick beside it. For example,

"10 add 5."

| | | |
|-----|----|----|
| 7 | 13 | 0 |
| ✓15 | 24 | 18 |
| 11 | 3 | 25 |

*The answer is 15 so
player 1 ticks number 15
on their bingo card.*

The first player to tick all nine numbers shouts 'Bingo' and wins the game.

BINGO QUESTIONS

$$6 \text{ minus } 6 = 0$$

$$0 \text{ add } 1 = 1$$

$$4 \text{ take away } 2 = 2$$

$$2 \text{ plus } 1 = 3$$

$$10 \text{ take away } 6 = 4$$

$$3 \text{ plus } 2 = 5$$

$$8 \text{ take away } 2 = 6$$

$$5 \text{ plus } 2 = 7$$

$$10 \text{ minus } 2 = 8$$

$$2 \text{ add } 7 = 9$$

$$5 \text{ plus } 5 = 10$$

$$21 \text{ take away } 10 = 11$$

$$6 \text{ plus } 6 = 12$$

$$45 \text{ take away } 32 = 13$$

$$8 \text{ add } 6 = 14$$

$$10 \text{ add } 5 = 15$$

$$49 \text{ minus } 33 = 16$$

$$15 \text{ add } 2 = 17$$

$$30 \text{ take away } 12 = 18$$

$$15 \text{ plus } 4 = 19$$

$$12 \text{ add } 8 = 20$$

$$48 \text{ take away } 27 = 21$$

$$18 \text{ plus } 4 = 22$$

$$35 \text{ take away } 12 = 23$$

$$12 \text{ add } 12 = 24$$

$$18 \text{ add } 7 = 25$$

$$30 \text{ take away } 4 = 26$$

$$13 \text{ add } 14 = 27$$

$$58 \text{ take away } 30 = 28$$

$$12 \text{ add } 17 = 29$$

$$17 \text{ add } 13 = 30$$

C₁

Materials:
children's exercise
books, bingo question
cards for each group

Let the children play bingo in groups of four. One child reads the question cards and the other three play bingo.

The winner of the game reads the questions for the next game.



Can all the children solve mental addition and subtraction problems using number facts and processes?

Extra activities

Support

The children work in groups of four.

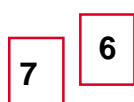
They lay out their set of cards face up.

Pick a number between 11 and 20, such as 13.

The children must take turns to pick up two cards which add up to 13.

Materials:

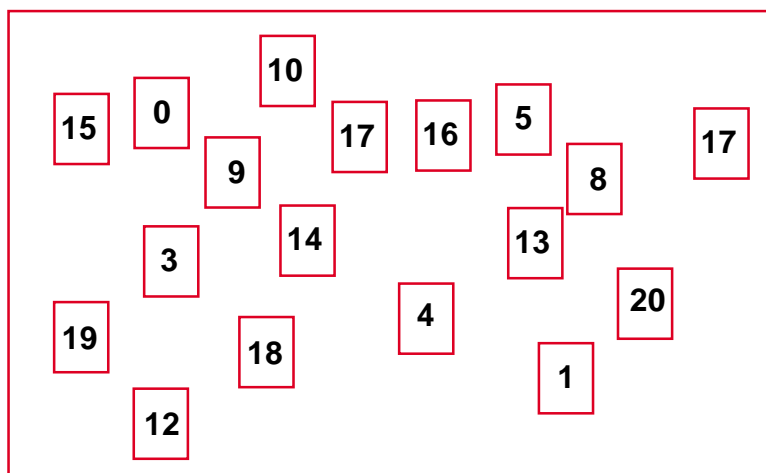
one set of number cards 0 - 20 for each group



$$7 + 6 = 13$$



$$11 + 2 = 13$$



Play again. Pick a number between 0 and 10, such as 6.

This time the children have to subtract one card from another to make the answer.



$$11 - 5 = 6$$



$$15 - 9 = 6$$

Extra activities

Extension

Give the children a maths challenge.

Ask them to make as many addition and subtraction sums as they can with the answer 12.

They are allowed to use all the numbers from 0 to 20, but they can use each number only once.

For example:

I can find 9 ways to make 12

$$4 + 8 = 12$$

$$1 + 11 = 12$$

$$7 + 5 = 12$$

$$12 + 0 = 12$$

$$2 + 10 = 12$$

$$18 - 6 = 12$$

$$15 - 3 = 12$$

$$16 - 4 = 12$$

$$19 - 7 = 12$$

Materials:

children's exercise books

Try again with 15, 13 or 10.

Unit 9

Graphs Topic 18: Scales

Aim:

to practise reading different types of scales

Sequence of objectives:

1. to give children opportunities to practise reading different scales such as on a thermometer, ruler, spring balance, bathroom scale, etc

This topic should give children a chance to practise reading scales. Scales are the numbers found on rulers, thermometers, spring balances and weighing machines. (We also call some weighing machines 'scales'.)

Teachers should provide enough materials and activities in which children can practise reading simple scales. Small group work is best to encourage participation, talk and discussion and to make classroom management more effective. Special equipment such as a thermometer or bathroom scales can be borrowed from a Secondary school or clinic.

T₁

Materials:
a thermometer



Start the lesson by talking about things which are hot and cold, for example, hot and cold drinks, cooked food, ice, etc.

Ask the children if they have seen a thermometer before. Ask them to say what it is used for and who might use it.

Show a thermometer or draw one on the blackboard if you don't have a real one.

Explain that a thermometer is used to measure temperature. The red mercury expands up the tube of the thermometer when it gets warm. The temperature is shown by the numbers along the side of the thermometer. The numbers are like a number line.

Water freezes into ice at 0 degrees Celsius.

Water boils at 100° Celsius.

The normal temperature of a healthy person is 37° Celsius.

Show the children how to read the temperature on the scale along the side of the thermometer.



Let the children work in small groups of two or three.
They must be very careful not to break the thermometer.

Give each small group some cups of warm and cold water.
Ask them to measure the temperature of the water using the thermometer.

Ask the children to guess the temperature outside in the hot sun
and inside in the shade.
Let them record their guess in a table.

Next let the children use the thermometer to measure the
temperature outside in the hot sun and inside in the shade.

Let the children compare their results.

Encourage them to talk about the temperatures.
Ask them to explain why the temperatures are different.

Materials:
a thermometer,
cups of warm and
cold water

| | guess | measurement |
|------------------------|-------|-------------|
| outside in the hot sun | | |
| inside in the shade | | |

The children complete
the activities on
page 37
of their resource book.

Unit 9. Graphs

Example.

1. 67

Talk about the pictures with your teacher before you start writing.

Write the temperature shown on each thermometer.

1.

2.

3.

4.

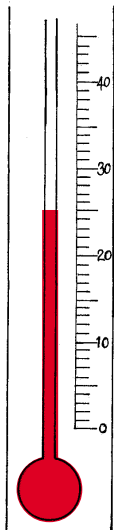
5.

6.

Materials:
children's resource
book, page 37

T₁

Materials:
thermometer,
blackboard



Show the children a thermometer for measuring daytime temperatures.

Draw it on the blackboard so that the children can see the scale.

Explain how the thermometer is used.

Talk about what the temperature might be on hot and cold days and at night. Ask the children what makes the temperature hot and what makes it cold.

Point to some temperatures on the thermometer scale, such as 25°, 28° and 32°.

Ask the children to read the temperatures.

Put the thermometer outside the classroom and let the children read the temperature at different times of the day.

Draw a graph on the blackboard to show the day's temperature at 8.00, 9.00, 10.00, etc.

Materials:
children's
resource book,
page 38

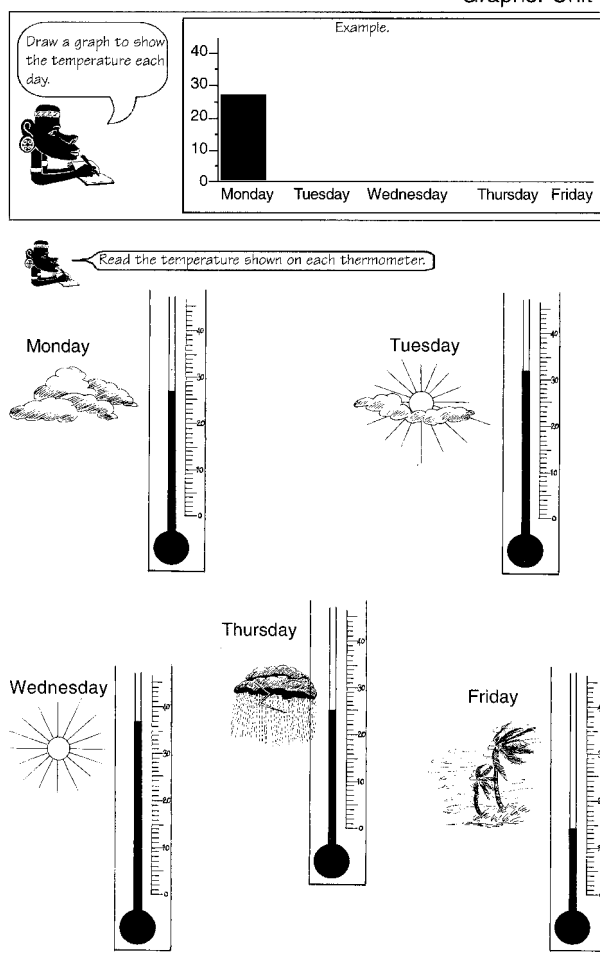
C₁

The children
complete the
activities on page
38 of their
resource book.

Talk about the
activities before
the children start
writing.

Give help to
children who find
the activities
difficult.

Graphs. Unit 9



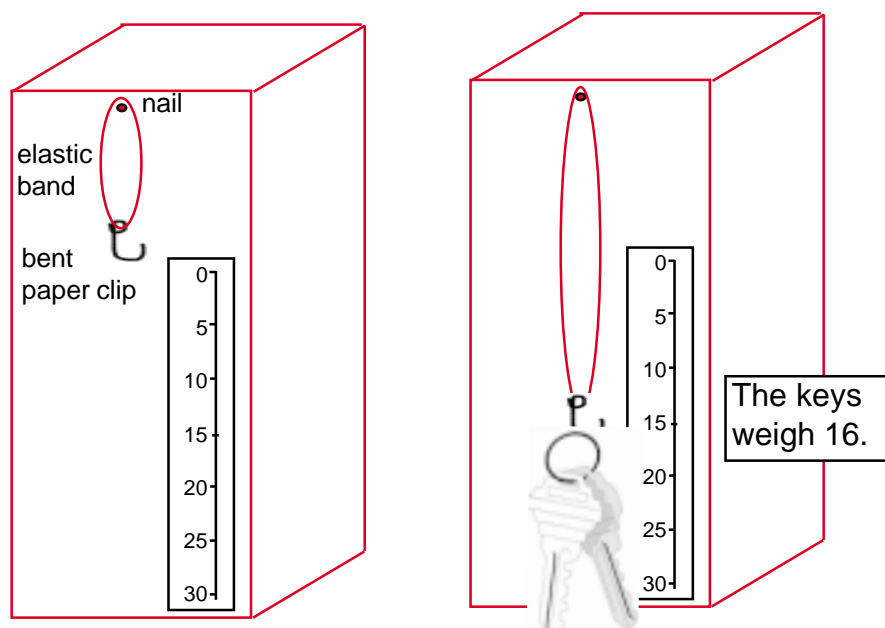
T₁

Make a simple spring balance from a block of wood, an elastic band and a bent paper clip. Draw a scale in fives from 0 to 30 along the side of the elastic band.

Show the children how to use the simple spring balance to weigh a variety of objects.

Make a table and record the weight of each object.

Materials:
simple spring
balance, objects for
weighing



| object | measurement |
|--------|-------------|
| keys | 16 |
| pen | |

C₁

The children work in small groups of two or three.

Give each group a balance and a collection of small objects to weigh.

Let them weigh the objects and record their weights in a table.

Materials:
simple spring
balance, small
objects for weighing

Unit 9

T₁

Materials:
market scales or
Nguzu Nguzu
Scales, blackboard,
chalk, objects for
weighing

Gather the children together at the front of the classroom so that they can all see.

Use a set of scales like those used in the market to weigh fish. If you do not have a set of scales, use the Nguzu Nguzu Scales from the Nguzu Nguzu Mathematics cards.

Explain how to read the scales.
Each of the small divisions is 100 grams.

Use the scales to weigh a variety of different objects.
Let the children read the weights.

Record the weights in a table.

C₁

Materials:
children's resource
book, page 39

The children
complete the
activities on
page 39 of their
resource book.

Unit 9. Graphs

Example.

Talk about the pictures with your teacher before you start writing.
1 kg is the same as 1000 grams.

1. 1 kg and 300 grams or 1,300 grams.



Write the weight shown on each scale.

| | | |
|--------|--------|--------|
| 1.
 | 2.
 | 3.
 |
| 4.
 | 5.
 | 6.
 |
| 7.
 | 8.
 | 9.
 |



Can all the children read a variety of different scales?

Extra activities Support

Borrow a set of bathroom scales from the local Secondary school or clinic, or bring the children to the clinic to use the scales.

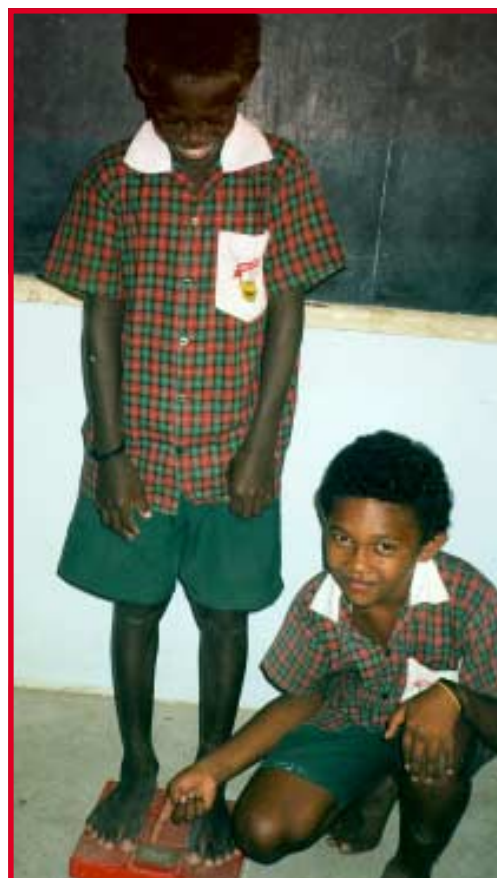
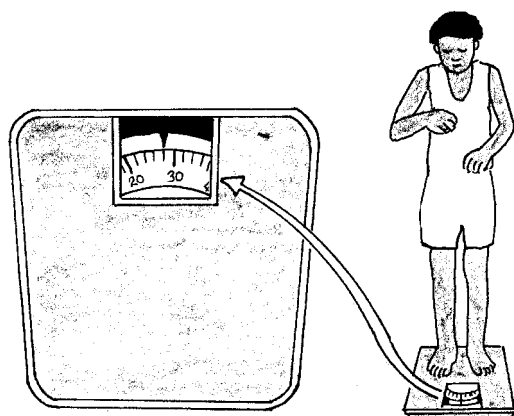
You could also take the children to a local airstrip or copra buying point and use the scales there.

In groups, the children should take turns to step onto the scales and read their own weights.

They should draw the numbers on the scale in their exercise books.

Let the children make a chart to show the weights of all the children in the class.

Materials:
bathroom scales,
chart paper



Extra activities Extension

Ask the children to look for examples of different scales in their environment, such as weighing machines at the market, speedometers in cars and trucks, oil and petrol pumps, etc.

Ask the children to draw examples of these scales.

Make a display of the children's drawings.

Materials:
paper, coloured
pencils

Number Topics 9 & 10: Multiplication

Aim:

to teach children to multiply numbers and groups of objects

Sequence of objectives:

1. to teach children that multiplication is a short way of writing repeated addition, e.g. $2+2+2+2$ is '4 lots of 2', written as $4 \times 2 = 8$
2. to use practical examples and real objects to explore multiplication
3. to arrange objects in groups and draw diagrams to show multiplication
4. to teach the children how to write multiplication sentences
5. to use a number line to show counting in twos, threes, fours, etc.

In this unit the children develop their skills in multiplication. They explore multiplication through practical examples and by grouping objects, leading to an understanding that multiplication is a quick way of performing repeated addition.

T₁

Materials:

different objects for grouping, such as leaves, stones, sticks, bottle tops and shells

Let the children sit together on mats at the front of the classroom so that they can all see.

Arrange some groups of objects, such as leaves, stones, bottle tops or shells, for example:



Ask the children questions about the groups of objects, for example,

"How many groups of leaves are there?"

"How many leaves in each group?"

"How many leaves altogether?"

On the blackboard, show the children the addition sentence for the 4 groups of leaves:

$$2 + 2 + 2 + 2 = 8$$

Show the children that this is the same as saying **4 groups of 2** and we can write it as a multiplication sentence:

$$4 \times 2 = 8$$

Repeat this for other groupings of leaves, stones, shells and bottle tops. Ask different children to write the addition and multiplication sentences on the blackboard each time.

C₁

Ask the children to work in groups of 4.
Let them use different objects such as stones, shells, seeds, leaves, sticks and bottle tops.

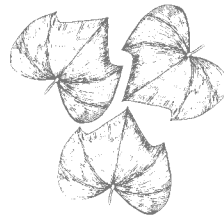
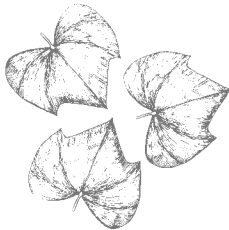
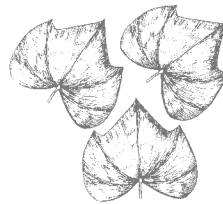
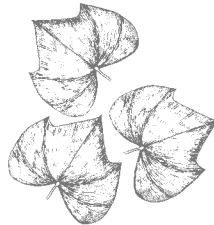
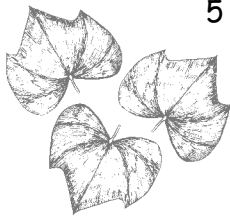
The children take turns to arrange some of the objects into groups, with the same number of objects in each group, for example,

5 groups of 3 leaves or 6 groups of 2 shells.

The other children in the group must draw a sketch of the objects in their books and write the addition and multiplication sentences each time:

$$3 + 3 + 3 + 3 + 3 = 15$$

$$5 \times 3 = 15$$



$$2 + 2 + 2 + 2 + 2 + 2 = 12$$

$$6 \times 2 = 12$$



Monitor the groups as they are working to make sure that they are writing the addition and multiplication sentences correctly.

Materials:
a selection of objects for grouping such as stones, shells, seeds, leaves, sticks and bottle tops



Can all the children recognise that multiplication is a quick way of performing repeated addition and write the appropriate notation?

T₂

Materials:
objects for the children
to hold such as books,
pencils, etc

Choose 5 children and ask them to stand in a line at the front of the classroom.

Give each child 2 books to hold.



Ask the class,
*"How many children are there?
How many books do they have
each?"*

How many books altogether?"

Show the children the
multiplication sentence:

$$5 \times 2 = 10$$

Next ask 7 other children to hold 3 pencils each. Ask,

"How many children are there?

How many pencils do they have each?

How many pencils altogether?"

Show the children the multiplication sentence: $7 \times 3 = 21$

Repeat this with other groups of children.

C₂

Materials:
objects for grouping
such as stones, shells,
seeds or bottle tops

Write some questions on the blackboard, for example,

1. Two children have four biscuits each.
How many biscuits do they have altogether?
 2. Three girls have two lollies each.
How many lollies do they have altogether?
 3. Five cats have caught three rats each.
How many rats have they caught altogether?
 4. Four boys have three mangoes each.
How many mangoes do they have altogether?
 5. Six fishermen have caught four fish each.
How many fish have they caught altogether?
- etc.

Read each question with the children. Let them use objects such as stones, shells, seeds or bottle tops to find the answers, and write the multiplication sentence each time.

For example, for question 1, they should make two groups of objects with four in each group, and write the multiplication sentence:

$$2 \times 4 = 8$$



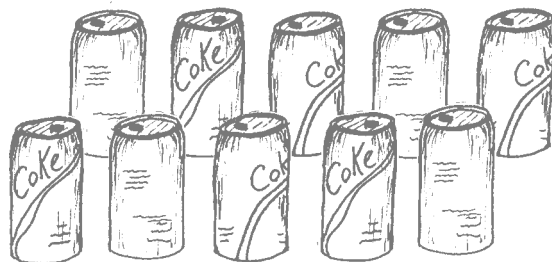
Can all the children use practical examples and real objects to explore multiplication?

T₃

Let the children sit on mats at the front of the classroom so that they can all see.

Use some objects that the children can see clearly such as leaves, drink cans or large shells.

Arrange some of the objects in rows, for example:



Explain the word 'row'. Tell the children that this means a set of objects arranged in a line.

Ask the children,

"How many rows are there?"

"How many cans in each row?"

"How many cans altogether?"

Tell the children that we can say there are **2 rows of 5**.

Write the multiplication sentence on the blackboard to show this:

$$2 \times 5 = 10$$

Repeat this with more rows of objects.

Materials:

large objects such as leaves, drink cans, or large shells

C₃

Let the children work in groups of 3 or 4.

Give each group a set of small objects such as stones, shells, seeds or bottle tops.

Ask the children to take turns at arranging the objects into rows.

The other children in the group should write down the number of rows and how many objects in each row. They should also write the multiplication sentence.

Materials:

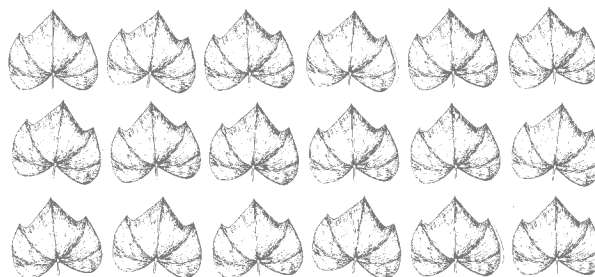
small objects such as stones, shells, seeds or bottle tops



T₃

Materials:
large objects such as
leaves, drink cans or
large shells

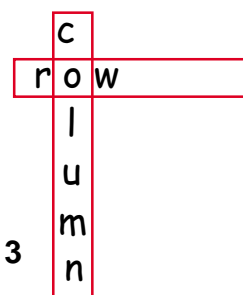
Let the children sit on mats at the front of the classroom.
Arrange some objects which the children can see clearly into rows,
for example:



Ask the children,
*"How many rows are there?
How many shells in each row?
How many shells altogether?"*

Remind the children that there are **3 rows of 6**, so the
multiplication sentence is **$3 \times 6 = 18$** .

Introduce the word '*column*'. Show the children
that *columns* are lines of objects which go from
top to bottom.



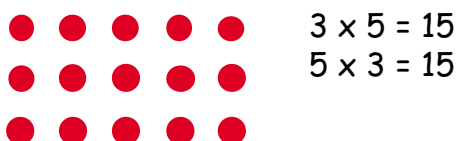
Show the children that there are 6 columns, with
3 shells in each column. So there are **6 columns of 3**
and the multiplication sentence is **$6 \times 3 = 18$** .

Repeat this with other sets of objects. Ask the children to tell you
the number of rows and columns each time.

C₃

Materials:
small objects such as
stones, shells, seeds
or bottle tops

Let the children work in groups of 3 or 4. Give each group a set of
small objects such as stones, shells, seeds or bottle tops.
Ask the children to take turns at arranging the objects into rows
and columns. Let the other children in the group draw a simple
diagram to show how the objects are arranged in rows and
columns. Encourage the children to write two multiplication
sentences each time, for example:



$$3 \times 5 = 15$$

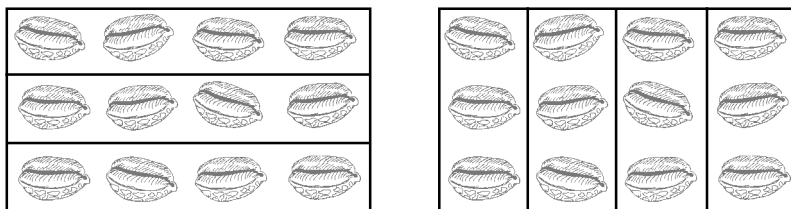
$$5 \times 3 = 15$$



Can all the children arrange objects in groups and draw diagrams to show
multiplication?

T₄

Draw some sets of objects on the blackboard arranged in rows and columns, for example:



Point to the first set of shells and ask,

"How many rows are there?"

"How many shells in each row?"

"How many shells altogether?"

There are **3 rows of 4**. Ask one of the children to come and write the multiplication sentence on the blackboard: **$3 \times 4 = 12$**

Now point to the shells arranged in columns. Ask,

"How many columns are there?"

"How many shells in each column?"

"How many shells altogether?"

There are **4 columns of 3**. This time the multiplication sentence should be: **$4 \times 3 = 12$**

Repeat this for other sets of objects arranged in rows and columns.

The children should begin to understand that, in a multiplication sentence, the answer will be the same when the two numbers are reversed, i.e.

$$3 \times 4 = 4 \times 3$$

C₄

Ask the children to complete page 40 in the children's resource book.

Explain that they must look at the pictures and complete two multiplication sentences in their exercise books each time.

For questions 7 - 10 the children should copy the multiplication sentences into their books. Then they must draw a picture of some objects arranged in rows and columns to work out the answer, for example:

| | |
|-------------|-------------------|
| ● ● ● ● ● ● | $2 \times 6 = 12$ |
| ● ● ● ● ● ● | $6 \times 2 = 12$ |

Materials:
blackboard, chalk

Materials:
children's resource
book, page 40



Can all the children write multiplication sentences?

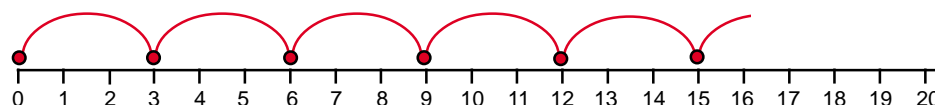
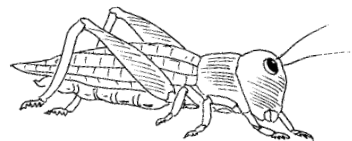
T₅

Materials:
blackboard, chalk

Draw a 0 - 20 number line on the blackboard.

Tell the children that Grace the Grasshopper can hop along the line in jumps of 2, 3, 4 and 5.

Show the children how Grace would hop along the number line in jumps of 3:



Ask the children to say each number as you move along the number line: 0, 3, 6, 9, 12, 15, etc.

Ask different children to come to the blackboard and move along the number line in 2's, 3's, 4's and 5's. Let the rest of the class say the numbers out loud.

Now ask children to make different numbers of jumps, for example:

"Who can make 5 jumps of 2?"

Who can make 6 jumps of 3?"

Who can make 4 jumps of 4?" etc.

Let the class predict which number Grace will reach at the end of her jumps.

Show the children that these jumps along the number line can be written as multiplication sentences, for example,

6 jumps of 3 can be written as $6 \times 3 = 18$

C₅

Materials:
paper, rulers, small
stones or shells

Ask the children to draw their own 0 - 20 number line on a piece of paper.

Let them practise moving a small stone or shell along the number line in jumps of 2, 3, 4 and 5.

Write some sets of jumps on the blackboard, for example:

| | |
|---------------|--------------|
| 2 jumps of 4 | 8 jumps of 2 |
| 5 jumps of 3 | 4 jumps of 5 |
| 4 jumps of 4 | 3 jumps of 3 |
| 10 jumps of 2 | 3 jumps of 5 |

Ask the children to make the jumps on their number line with their stone or shell and write down the multiplication sentence each time.

T₅

Play a number line game with the children.
Draw two 0 - 20 number lines on the blackboard and divide the class into two teams, the *Frogs* and the *Grasshoppers*.

Ask one child from each team to come to the blackboard.
Call out a multiplication question such as **3 x 4**.
The two children must mark the correct number of jumps on their number line, i.e. **3 jumps of 4** to reach the number **12**.
The first child to do this correctly scores a point for their team.

Continue until all the children have had a turn and add up the points at the end of the game.

Vary this game by asking a child from just one of the teams to come to the blackboard.
For example, give the chalk to a child from the *Frogs* team and call out a multiplication question, such as **5 x 3**.
If the children in the *Grasshoppers* team can say the answer, i.e. **15**, before the **5 jumps of 3** have been drawn on the blackboard, they score a point.
If the child at the blackboard can draw the correct jumps to reach 15 before the other team can say the answer, then the *Frogs* score a point.
Now ask a child from the *Grasshoppers* team to draw the jumps on the number line and the *Frogs* team must say the answer, and so on.

Materials:
blackboard, chalk

C₅

Ask the children to complete page 41 of the children's resource book.
They must look carefully at the number lines and write the multiplication sentences for each one.
For example, if Grace the Grasshopper makes **4 jumps of 3**, they should write the multiplication sentence **4 x 3 = 12**

For questions 7 to 14, the children can count along the number line at the bottom of the page to help them find the answers.

If the children find it easier to draw the jumps each time they should first copy the number line onto a piece of paper.

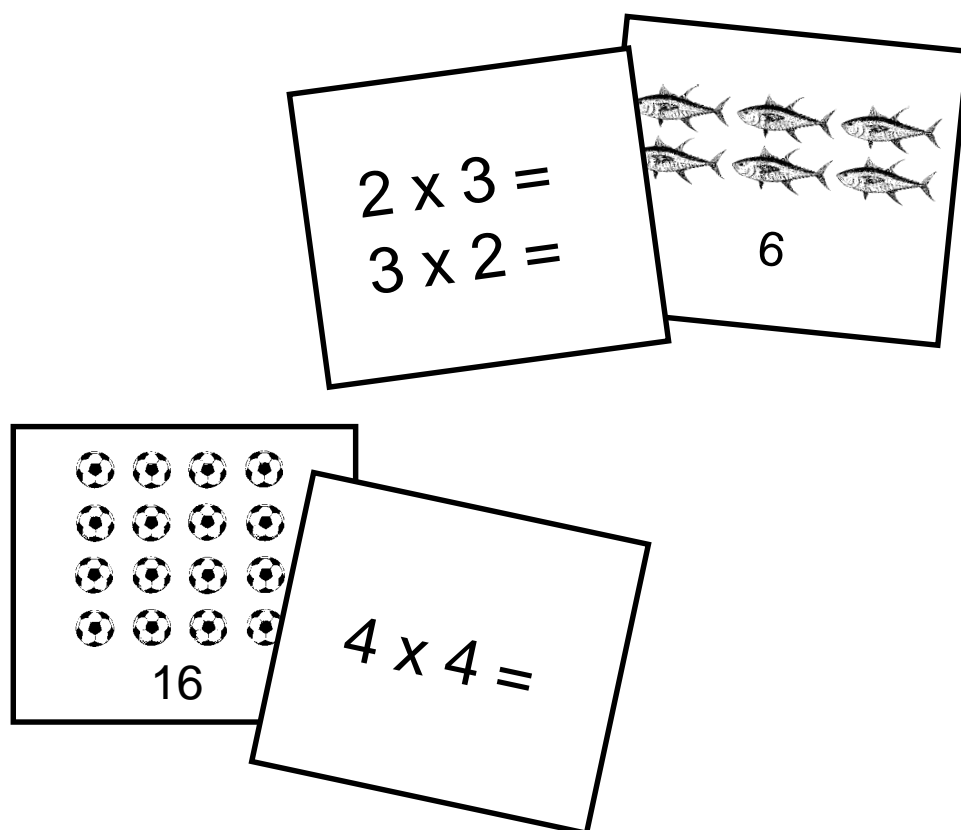
Materials:
children's resource book, page 41



Can all the children use a number line to show counting in twos, threes, fours, etc.?

Materials:
multiplication
matching cards

Let the children play a matching game in groups of 3 or 4.
Give them a set of Multiplication Match cards.
They must spread the cards face down on the table and take turns
to pick up two of the cards.
The children keep the two cards if they match, for example:



If the cards do not match, the child must put them back on the table, face down, and the next player has a turn.

The game continues until all the cards have been picked up.
The winner is the player with the most pairs of matching cards.

Extra activities

Extension

Write some multiplication questions on the blackboard, for example:

$5 \times 2 =$

$7 \times 3 =$

$6 \times 4 =$

$9 \times 2 =$

$4 \times 5 =$

$11 \times 2 =$

$7 \times 4 =$

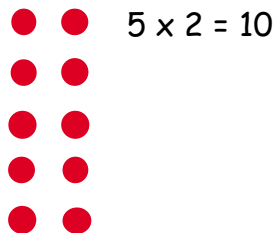
$6 \times 5 =$

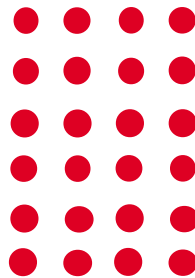
$8 \times 3 =$

$4 \times 4 =$

Ask the children to copy the questions into their books and find the answer to each one.

Allow the children to draw a multiplication diagram each time to help them find the answer, for example:


 $5 \times 2 = 10$



$6 \times 4 = 24$

Encourage the children to find the answers without drawing a diagram if they can.

Materials:

blackboard, chalk,
children's exercise
books

Unit 11

Number Topics 11 & 12: Multiplication and early division

Aim:

to extend the children's understanding of multiplication and to introduce them to the concept of division

Sequence of objectives:

1. to investigate patterns on a hundred square when counting in 2's, 3's, etc.
2. to make multiplication tables for 2, 3, 4, 5, 10
3. to learn to share objects by 'giving out', e.g. sharing 14 shells between 2 people by giving one each in turn until there are none left
4. to learn to share objects by making groups, e.g. putting 14 shells into groups of 2 to find out how many groups can be made.

In this unit the children develop their understanding of multiplication by exploring

patterns of multiples and learning multiplication facts.

They are introduced to the concept of division through sharing and grouping activities.

T₁

Materials:
blackboard, chalk

Draw a 1 - 100 square on the blackboard.
Colour the first four multiples of 3.

| | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 |
| 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 |
| 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 |
| 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |

Encourage the children to help you continue the pattern of 3's.

Ask,

"Who can find the next number in the pattern?"

Let different children come to the blackboard and colour the numbers.

When the pattern is complete, ask questions such as,

"Which is the 5th number in the pattern?"

"Which is the 10th number?"

"How many squares have we coloured?" etc.

Ask the children to describe the shape of the pattern of coloured squares.









Ask the children to turn to page 42 of the children's resource book.

Let them use the 1 - 100 square to investigate patterns when counting in 2's, 3's, 4's and 5's.

For example, if they make the pattern of 4's, ask them to count carefully in 4's and place an object on the correct numbers.

Materials:

children's resource book, page 42, small shells, stones, seeds and bottle tops

| | | | | | | | | | |
|----|---|----|---|----|---|----|--|----|---|
| 1 | 2 | 3 |  | 5 | 6 | 7 |  | 9 | 10 |
| 11 |  | 13 | 14 | 15 |  | 17 | 18 | 19 |  |
| 21 | 22 | 23 |  | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

Monitor the children as they work and ask them to describe the different patterns they make.



Can all the children investigate patterns on a hundred square when counting in 2's, 3's etc. ?

T₂

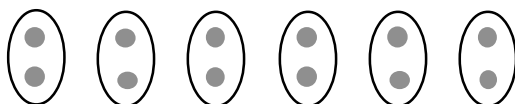
Materials:
blackboard, chalk

Remind the children of the work they did in Unit 10 when they made groups of objects and drew diagrams to show multiplication.

Ask,

"Who can draw a picture to show 6 lots of 2?"

Choose a child who can come to the blackboard and draw a diagram, for example:



Write the multiplication sentence: $6 \times 2 = 12$

Draw a number line on the blackboard and ask,

"Who can show 4 lots of 2 on the number line?"

The children should be able to draw 4 jumps of 2:



Ask one of the children to write the multiplication sentence: $4 \times 2 =$

8

Ask the children to help you make a table of all the 'two multiplications'.

Ask questions such as,

"How many 2's make 12?"

"How many 2's make 18?" etc.

| | | | |
|----|-----|---|----|
| 1 | x 2 | = | 2 |
| 2 | x 2 | = | 4 |
| 3 | x 2 | = | 6 |
| 4 | x 2 | = | 8 |
| 5 | x 2 | = | 10 |
| 6 | x 2 | = | 12 |
| 7 | x 2 | = | 14 |
| 8 | x 2 | = | 16 |
| 9 | x 2 | = | 18 |
| 10 | x 2 | = | 20 |

C₂

Materials:
blackboard, chalk

Write some multiplication questions on the blackboard, for example:

$$4 \times 2 = \square$$

$$7 \times 2 = \square$$

$$9 \times \boxed{2} =$$

$$\square \times 2 = 20$$

$$\square \times 2 = 16$$

$$\square \times 2 = 10$$

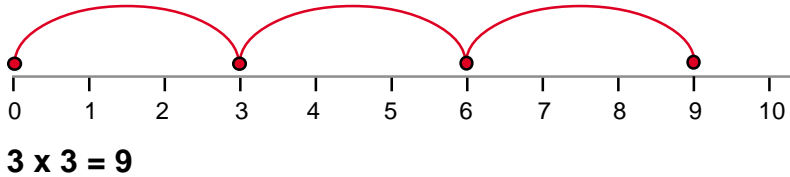
Ask the children to use the multiplication table to find the answers.

T₂

Construct the 3 times table using activities similar to those for the 2 times table. Ask,
"Who can draw a picture to show 2 lots of 3?"



"Who can show 3 lots of 3 on the number line?"



Ask the children to help you make a table of 'three multiplications'.

| |
|-------------|
| 1 x 3 = 3 |
| 2 x 3 = 6 |
| 3 x 3 = 9 |
| 4 x 3 = 12 |
| 5 x 3 = 15 |
| 6 x 3 = 18 |
| 7 x 3 = 21 |
| 8 x 3 = 24 |
| 9 x 3 = 27 |
| 10 x 3 = 30 |

During the week, repeat similar activities for the 4, 5 and 10 times tables.

Write the tables on chart paper and display them in the classroom.

| |
|-------------|
| 1 x 4 = 4 |
| 2 x 4 = 8 |
| 3 x 4 = 12 |
| 4 x 4 = 16 |
| 5 x 4 = 20 |
| 6 x 4 = 24 |
| 7 x 4 = 28 |
| 8 x 4 = 32 |
| 9 x 4 = 36 |
| 10 x 4 = 40 |

| |
|-------------|
| 1 x 5 = 5 |
| 2 x 5 = 10 |
| 3 x 5 = 15 |
| 4 x 5 = 20 |
| 5 x 5 = 25 |
| 6 x 5 = 30 |
| 7 x 5 = 35 |
| 8 x 5 = 40 |
| 9 x 5 = 45 |
| 10 x 5 = 50 |

| |
|---------------|
| 1 x 10 = 10 |
| 2 x 10 = 20 |
| 3 x 10 = 30 |
| 4 x 10 = 40 |
| 5 x 10 = 50 |
| 6 x 10 = 60 |
| 7 x 10 = 70 |
| 8 x 10 = 80 |
| 9 x 10 = 90 |
| 10 x 10 = 100 |

Materials:
 blackboard, chalk,
 chart paper

C₂

Write some multiplication questions on the blackboard, for example:

$$2 \times 3 = \square \quad 9 \times 3 = \square \quad 4 \times \boxed{3} =$$

$$\square \times 3 = 21 \quad \square \times 3 = 30 \quad \square \times 3 = 15$$

Ask the children to use the 3 times table to find the answers.

During the week, repeat similar activities for the 4, 5, and 10 times tables.

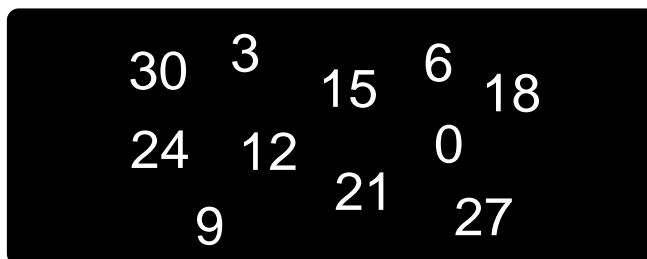
Materials:
 blackboard, chalk,
 times tables written
 on chart paper

Unit 11

T₂

Materials:
blackboard, chalk,
0 - 10 cards

Write the numbers in the 3 times table on the blackboard:



Shuffle a set of 0 - 10 cards.

Tell the children that you are going to turn over the top card and show it to them. They must look on the blackboard to find the number that is 3 times the number on the card. Ask one of the children to come and cross off the number.

For example, if you turn over the number **5**, one of the children must cross off the number **15** because $5 \times 3 = 15$.

Repeat this with the next card you turn over and continue until all the numbers have been crossed off.

C₂

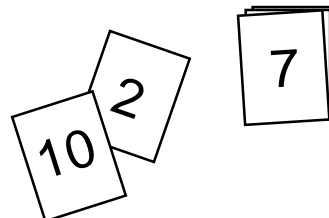
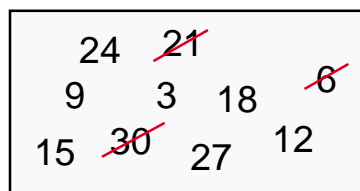
Materials:
paper, 0 - 10 cards

Let the children work in groups of 4 or 5 and play the game with the 0 - 10 cards.

Ask them to write out the numbers in the 3 times table on a piece of paper.

One child should shuffle the cards and turn them over in turn.

The other children take turns to cross off the correct number on



the piece of paper.

The children can repeat this game using the numbers from the 2, 4, 5 and 10 times tables.



Can all the children make and use multiplication tables for 2, 3, 4, 5 and 10?

T₃

Let the children sit on mats at the front of the class where they can all see.

Show them 10 shells and say that you are going to 'share' the shells between 2 children.

Choose 2 children and give out the shells one at a time until there are none left.



Ask,

"How many shells do they have each?"

The children should answer, **5 shells each.**

Repeat this demonstration with different numbers of shells and children, for example,

14 shells shared between 2 children,

8 shells shared between 2 children,

9 shells shared between 3 children,

15 shells shared between 3 children,

12 shells shared between 4 children.

Each time ask how many shells the children have each.

Materials:

a collection of shells

C₃

Divide the children into groups of 5 or 6 and give each group a set of small objects such as shells, stones, seeds or bottle tops.

Give the children instructions for sharing out their objects.

Let a different child in the group do the sharing each time by giving out the correct number of objects until there are none left.

For example:

"Share 12 between 2 children.

Share 15 between 5 children.

Share 12 between 4 children.

Share 18 between 3 children.

Share 16 between 2 children.

Share 20 between 5 children." etc.

Monitor the groups to check that they are sharing their objects correctly.

Materials:

a collection of small objects such as shells, stones, seeds and bottle tops

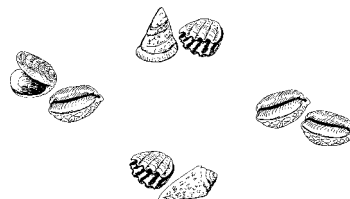
T₃

Materials:
a collection of shells

Show the children a group of 8 shells and tell them that you are going to share them between 4 children.

Ask the class to predict how many shells the children will have each.

Share out the shells among the 4 children so that they have 2 each.



Introduce the terms '*divide*' and '*divided by*' to the children.

Tell them that sharing the 8 shells between 4 children is the same as dividing 8 into 4 groups.

On the blackboard write, **8 divided by 4 is 2**



Show the children the sign for division:

Write the division sentence on the blackboard for 8 divided by 4:

$$8 \div 4 = 2$$

Repeat this by sharing different numbers of shells between different numbers of children.

Ask the children to write the division sentence in their books each time. For example, if you share 10 shells between 2 children, say, "*10 divided by 2 is 5.*"

The children should write: **10 ÷ 2 = 5**

C₃

Materials:
children's resource book, page 43, small objects such as shells, stones, seeds and bottle tops

Ask the children to complete page 43 in the children's resource book.

Let the children use shells, stones, seeds or bottle tops as counters. For example, in question 1, there are 8 pineapples and 2 groups.

The children should divide 8 between the 2 groups to find that there are 4 in each group.

Ask them to write the division sentence in their exercise books:

$$8 \div 2 = 4$$

T₃

Let the children sit together on mats at the front of the classroom so that they can all see.

Show the children 9 shells and tell them that you are going to share them between 2 children.

Ask the class to predict how many shells the two children will have each.

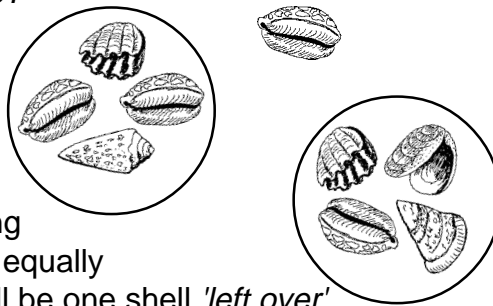
Choose 2 children and give out the shells one at a time.

When the children have 4 shells each, hold up the remaining shell and ask,

"Who should I give this shell to?"

Show the children that if you give out the last shell, one child will have 5 shells and the other will have 4.

Lead them to the understanding that you cannot share 9 shells equally between 2 children. There will be one shell 'left over'.



Repeat this activity with different numbers of shells and children.

Ask a different child to share out the shells each time.

For example, ask them to,

"Share 11 shells between 2 children.

Share 10 shells between 3 children.

Share 14 shells between 3 children." etc.

Each time ask,

"How many shells do the children have each?"

How many shells are left over?"

Materials:

a collection of shells

C₃

Let the children work in groups of 4 or 5 and use small objects such as shells, stones, seeds or bottle tops for sharing.

Let the children take turns to share out different numbers of objects.

Give instructions such as,

"Share 15 shells between 2 children.

Share 8 shells between 3 children.

Share 13 shells between 4 children." etc.

Each time ask the children to tell you how many shells are left over.

Materials:

a collection of small objects such as shells, stones, seeds and bottle tops



Can all the children share objects by 'giving out'?

T₄

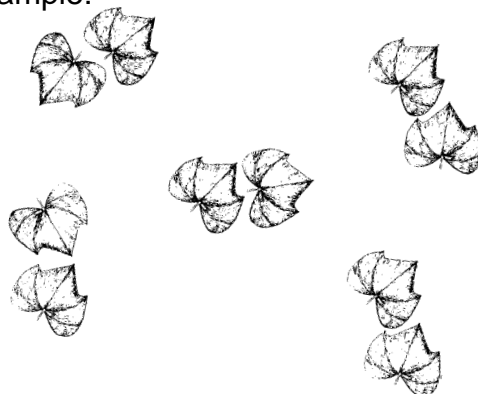
Materials:
a set of large
objects such as
leaves or drink cans

The children have now learnt to share objects by '*giving out*' one at a time. Another way of dividing is by '*repeated subtraction*', or finding how many groups of the same size can be made from a set of objects.

Ask the children to sit together on mats at the front of the classroom where they can all see. Use some objects such large leaves or drink cans. Ask, for example:

"How many groups of 2 can I make from 10 leaves?"

Demonstrate this for the children. This time, instead of giving out the leaves one at a time, *take away* 2 leaves each time to make the groups. Say, *"There are 5 groups of 2."*



Repeat this with different numbers of leaves.

Ask a different child from the class to make the groups each time.

For example, ask:

"How many groups of 3 can you make from 9 leaves?"

How many groups of 4 can you make from 12 leaves?"

How many groups of 5 can you make from 15 leaves?" etc.

Help the children to make the groups by taking away the correct number of leaves each time, and not by giving them out one at a time. Write the division sentences on the blackboard.

C₄

Materials:
a collection of
small objects such
as shells, stones,
seeds and bottle
tops

Divide the children into groups of 4 or 5 and give each group a set of small objects such as shells, stones, seeds or bottle tops.

Ask questions such as,

"How many groups of 2 can you make from 8?"

How many groups of 3 can you make from 15?"

How many groups of 4 can you make from 16?"

How many groups of 2 can you make from 9?"

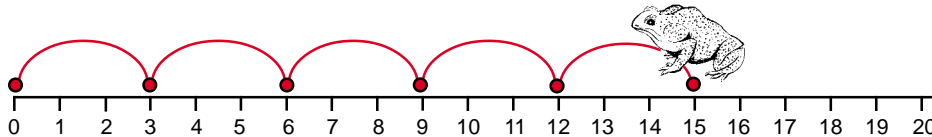
How many groups of 5 can you make from 11?" etc.

Let a different child make the groups each time. Check to see that they are making the groups correctly. For example, to find how many groups of 2 can be made from 8, they should put out 8 stones or shells, and then take away 2 shells at a time. Each time, ask if there are any shells left over.

T₄

Show the children how to use the number line for division by repeated subtraction.

Draw a number line on the blackboard and tell the children that Freddie the Frog is at number 15 and wants to get back to 0. Ask, *"How many jumps of 3 will Freddie need to reach 0?"* Demonstrate the 5 jumps of 3 on the blackboard:

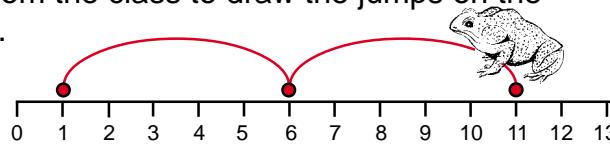


So there are five 3's in 15.

Repeat this with other numbers. For example, say, *"Freddie is at 12. How many jumps of 4 will he need to reach 0?"* *"Freddie is at 14. How many jumps of 2 will he need to reach 0?"* *"Freddie is at 18. How many jumps of 6 will he need to reach 0?"* etc.

Ask a different child from the class to draw the jumps on the blackboard each time.

Now tell the children that Freddie the Frog is at number



11 and wants to reach 0 in jumps of 5. Show the children that he can only get to number 1 in jumps of 5.

So there are two 5's in 11 with 1 left over.

Materials:
blackboard, chalk

C₄

Ask the children to draw a 0 - 25 number line on a piece of paper, or use the number line on pages 40 and 41 of the children's resource book. Write some questions on the blackboard, for

example:

How many 3's in 12?

How many 3's in 10?

How many 5's in 15?

How many 7's in 21? etc.

Ask the children to use the number line to find the answers and write them in their exercise books, for example,

There are four 3's in 12.

There are three 3's in 10 with 1 left over, etc.

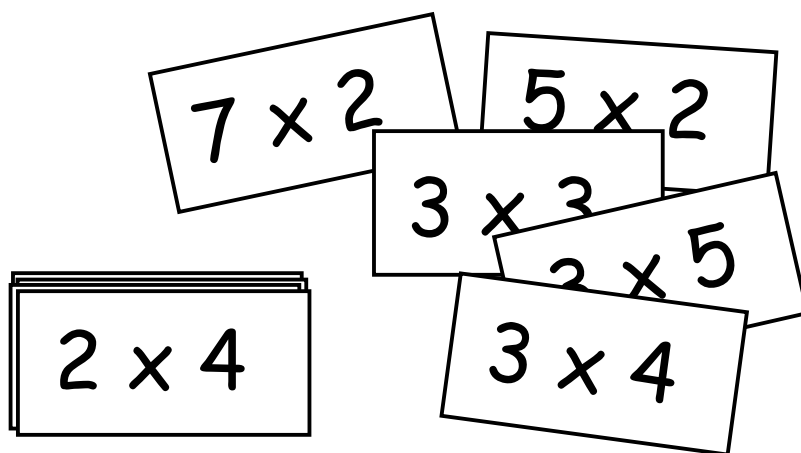
Materials:
paper, pencils,
rulers, the number
line on pages 40
and 41 of the
children's resource
book



Can all the children share objects and divide numbers by making groups?

Materials:
sets of cards with
multiplication
questions, small
objects such as shells,
stones, seeds or bottle
tops

Prepare some sets of cards with multiplication questions.

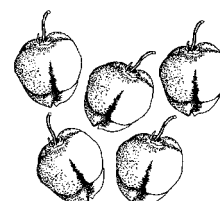
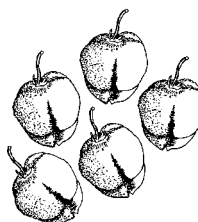
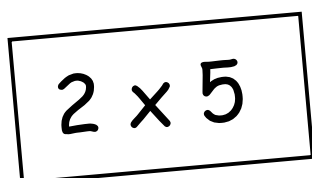


Ask the children to work in small groups.

Give each group a set of small objects such as shells, seeds, stones or bottle tops.

The children take turns to turn over one of the cards. They read the multiplication question on the card and then use counters to help them find the answer.

For example, if they turn over the card with the question 2×5 , they should use the objects to make 2 groups of 5 to find the answer 10.



When the children have practised making the groups of objects and finding the answers, encourage them to try to remember the multiplication facts without making the groups.

Extra activities

Extension

Let 2 children play the 'Four in a line' game.

Each child needs a set of objects to use as counters. The 2 players should have different objects.

The players take turns to place a counter on the board. They must try to place 4 counters in a line, either across the board, downwards or diagonally.

To place a counter, a player must first say the answer to the multiplication question in the circle. For example, if a player wants to place a counter in the '8 x 3' circle, they must first say the answer, i.e. 24.

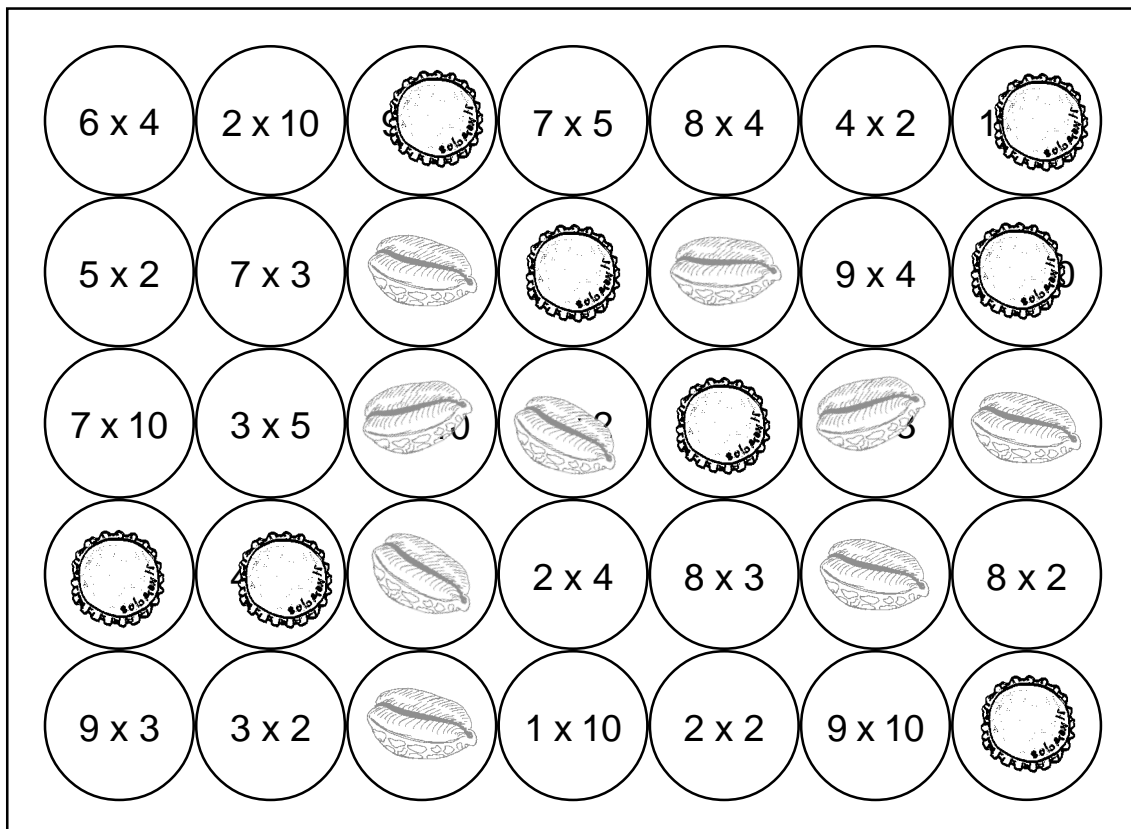
A third child can act as referee, with a set of times tables to check the answers.

Players can 'block' each other by placing counters to stop the other player completing a line of 4.

The first player to complete a line of 4 is the winner.

Materials:

'Four in a line' game board, shells, stones, seeds or bottle tops, 2, 3, 4, 5 and 10 times tables



Measurement topic 23: Area of irregular shapes

Aim:

to enable the children to find the approximate area of irregular shapes using squares

Sequence of objectives:

1. to teach the children to find the approximate area of irregular shapes such as leaves, hands, etc. by filling them with squares or drawing an outline on a square grid.

In Unit 7 the children learnt to find the area of regular shapes by counting squares. In this unit the children again use squares, but this time work with irregular shapes that do not fit exactly onto a square grid, so the measurements are approximate. It will be helpful if the children have squared paper to use, or exercise books with squared paper inside.

T₁

Materials:
blackboard, chalk

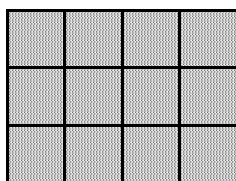
Remind the children of the activities they did in Unit 7.

Draw a rectangle on the blackboard:



Ask the children how they could find the area of the rectangle. The children should be able to tell you how to draw squares inside the rectangle to find its area.

Demonstrate this on the blackboard:

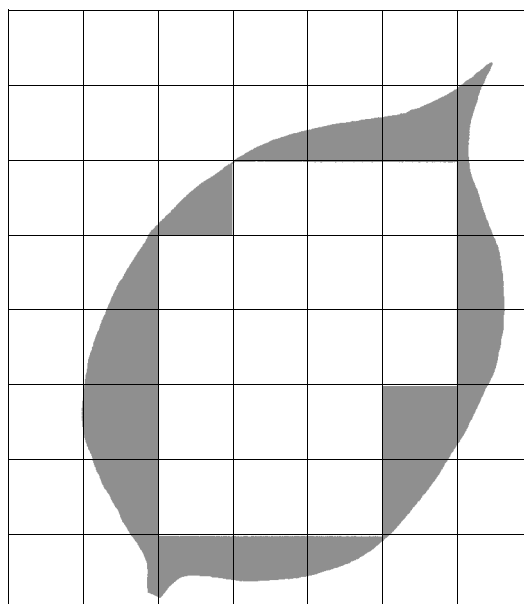


Ask the children to tell you the area of the rectangle, i.e. **12 squares**.

Now draw a large picture of a leaf on the blackboard.

Draw squares inside the leaf and ask the children if they can tell you its area.

Ask the children to help you count the whole squares inside the leaf. (Shade in the parts of squares around the edge of the leaf to make this easier for the children.)



When the children have counted the 10 whole squares, ask them if this is the area of the whole leaf.

Point to the parts of squares around the edge and ask the children how they could count them. Explain the rule for counting these parts:-

*Count the parts that are bigger than half a square as 1 square.
Don't count any parts that are less than half a square.*

Point to the parts of squares and ask the children which ones should be counted. Mark these parts and add them to the number of whole squares; so the area is 15 squares.

Explain that this is not an exact measurement, but will be close to the correct area.

C₁

Ask the children to work in twos. Give each pair of children two leaves of similar size.

Ask them to carefully draw round the leaves on a piece of grid paper, and find out which one has the bigger area.

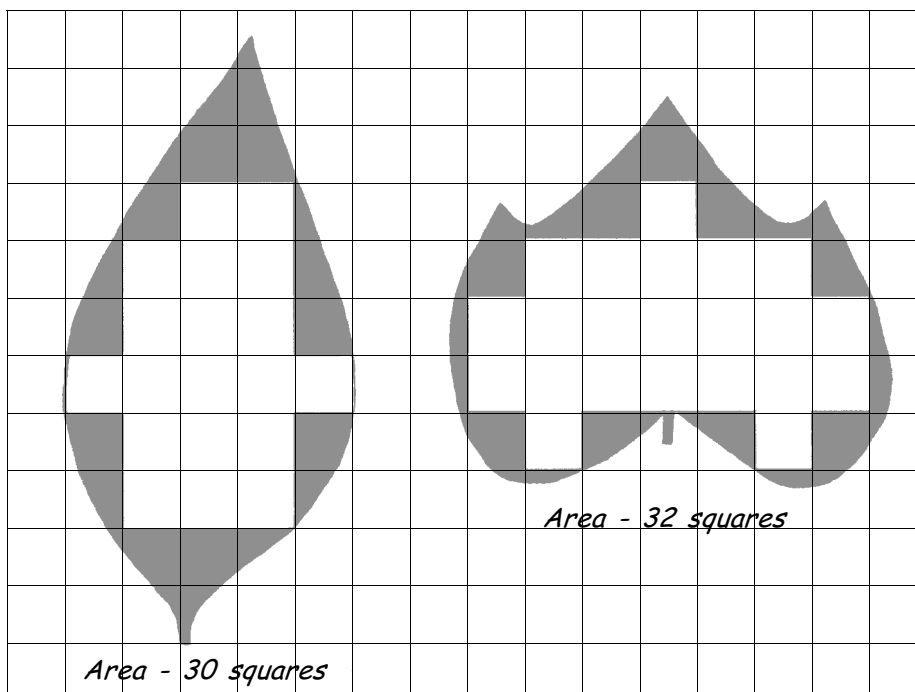
Remind the children to count the whole squares first, and then the parts of squares which are bigger than half a square.

Let them colour the parts around the edge to make the counting easier, and record the areas.

Ask the children to tell you which leaf has the bigger area.

Materials:

a selection of leaves,
grid paper



T₁

Materials:
grid paper

Let the children sit on mats at the front of the classroom so that they can all see.
Ask for one child to come forward and place their hand on a piece of grid paper, with their fingers together.
Carefully draw round the child's hand and show the outline to the rest of the class. Ask, for example,
"How can we find the area of Ruth's hand?"

The children should be able to tell you how to count the whole squares inside the outline first, and then count all the parts of squares that are bigger than half a square, to find the approximate area.

Demonstrate this for the children to see.

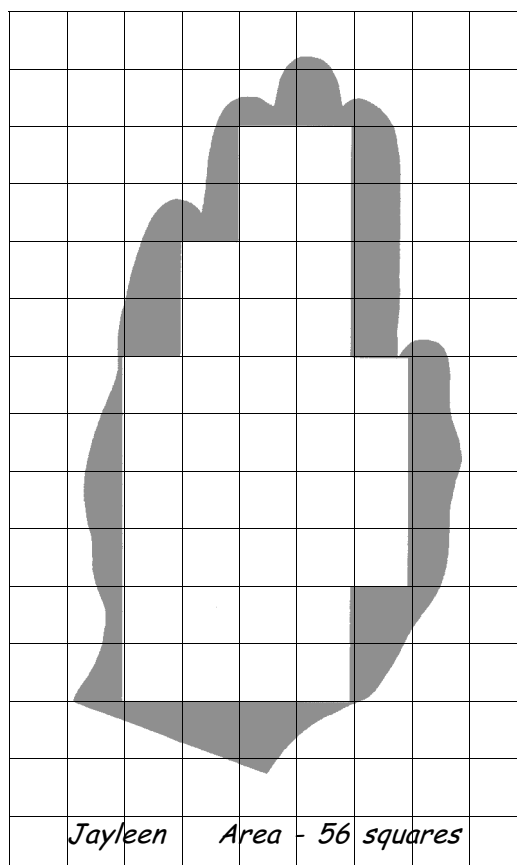
C₁

Materials:
grid paper, pencils

Ask the children to work in twos to find the area of their hands.
Let one child place their hand on a piece of grid paper while the other carefully draws the outline.
They should then repeat this activity so that both children have an outline of their hand.
Ask the children to carefully count the squares inside the outline of their hand and record the area.
Use the children's work to make a display.

Ask the children questions such as,
"Whose hand has the biggest area?"
"Whose hand is the smallest?" etc.

The children could repeat this activity, but this time measuring the area of their feet.

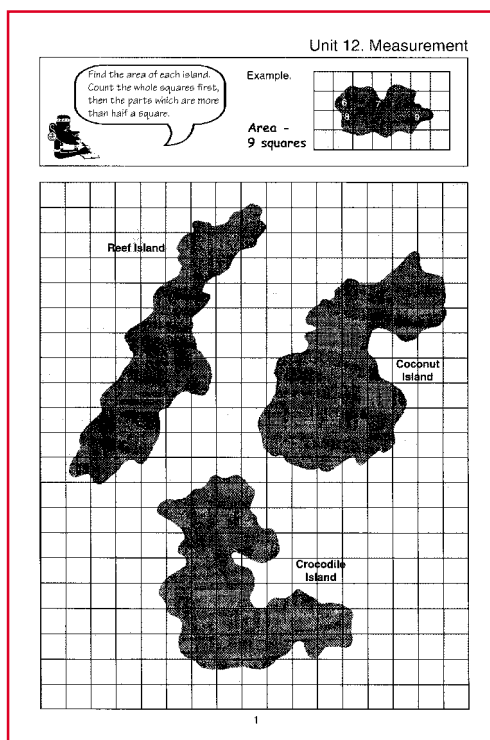


T₁

Ask the children to turn to page 44 of the children's resource book and look at the map of the three islands. Ask,
"Which island is the biggest?"
"Which island is the smallest?"
"How can you find the area of each island?"

Materials:
 children's resource
 book, page 44

Encourage the children to tell you how they would count the squares inside each island to find the areas.



C₁

Ask the children to carefully find the area of each island on the map on page 44 of the children's resource book.

Materials:
 children's resource
 book, page 44

Remind them to count the whole squares first and then count the parts around the edge which are bigger than half a square. Ask the children to record their results in their exercise books. The children's results may not all be exactly the same but they should be similar.

| | Area |
|------------------|------|
| Coconut Island | |
| Reef Island | |
| Crocodile Island | |



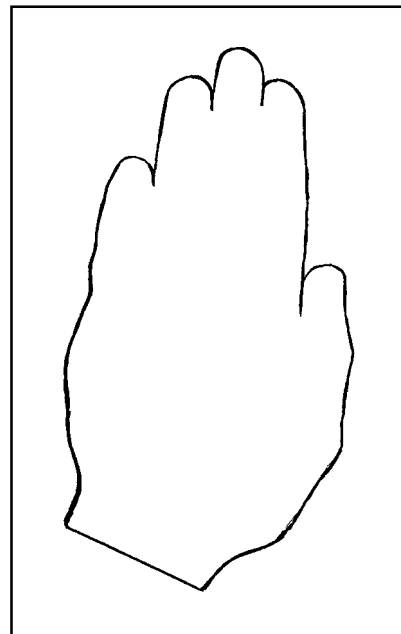
Can all the children find the approximate area of irregular shapes?

Materials:
paper, cut-out squares

Let the children work in twos.

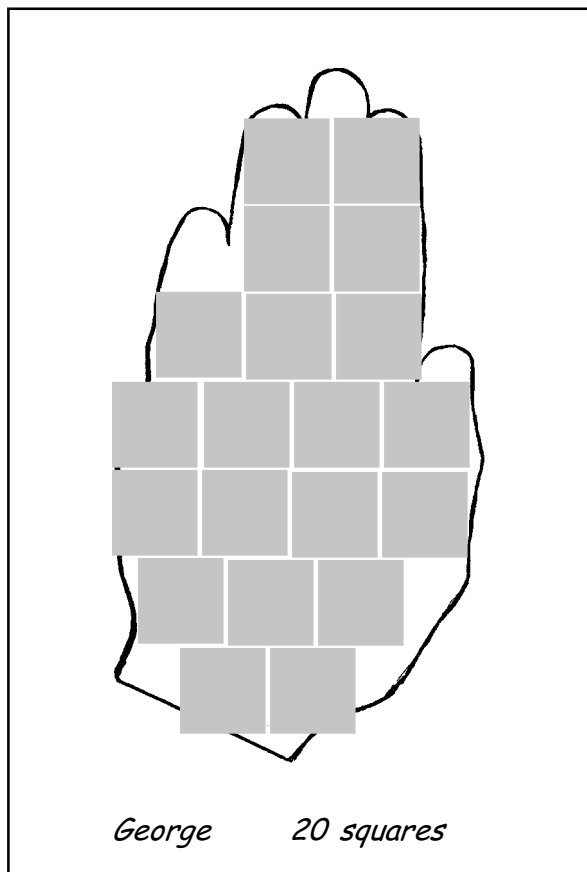
Give them some paper and a set of cut-out squares of the same size.

Ask them to help each other draw round one of their hands, so that each child has an outline of their hand on a piece of paper.



Ask the children to estimate how many of the squares will cover the drawing of their hand. Now ask them to carefully arrange the squares on top of their drawing, and count the number of squares to find the area of their hand.

Explain that this is not an exact measurement because they have not counted the bits around the edge of the outline.



Ask the children to label their drawing with their name and the number of squares they used.

Use the drawings to make a display in the classroom.

Extra activities

Extension

Ask the children to work in twos.

Let them use grid paper and each draw a map of a island similar to the one on page 44 of the children's resource book. The children should then exchange their maps and let their partner find the area of the island by counting squares.

Remind the children to count the whole squares first and then the squarres around the edge which are bigger than half a square.

Materials:
grid paper, pencils

Unit 13

Number Topic 13: Fractions

Aim:

to revise Standard Two work and to introduce the idea of finding a fraction of a quantity

Sequence of objectives:

1. to revise Standard Two work using diagrams and objects
2. to teach the children how to find a fraction of a quantity by dividing.

In this unit the children will revise the concept of fractions using diagrams and objects.

They will revise the fact that fractions are equal parts of a whole.

They will also learn to divide or share a quantity into equal fractions, such as half of 12.

T₁

Materials:

large shapes cut from card

Show the children one of the shapes.

Tell them that you are going to fold it into two halves.

Fold the shape in different ways so that the two parts are not the same size.

Each time ask,

"Are these halves?"

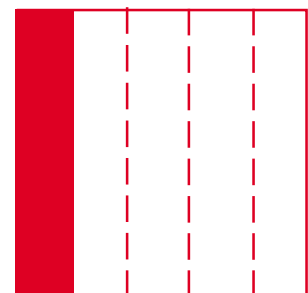
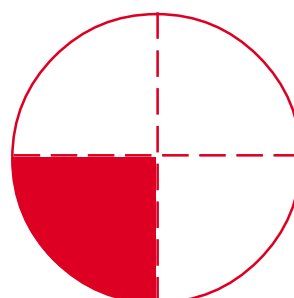
"No"

"Why not?"

"Because they are the same size."

Fold the shape into two halves. Show that they are the same size.


Repeat with thirds, quarters and fifths.



Ask the children to complete the activities in their resource book, page 45.

Talk about the activities before the children begin writing.


Materials:
children's resource
book, page 45



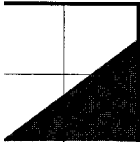
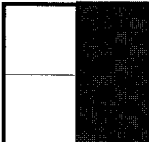



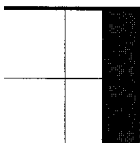
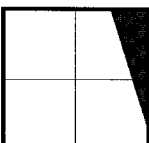
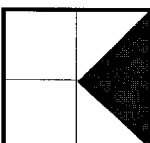

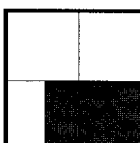




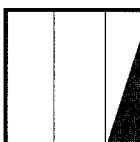

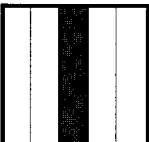
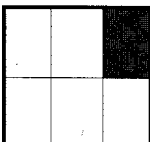


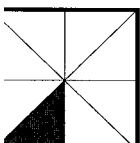

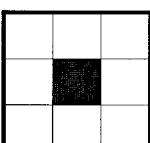


Talk about the fractions.
Are they true or false?
Why are they false?

Example.

1. False.
(The parts are not the same size.)



Write true or false for each fraction.

| | | | | |
|---|---|---|--|---|
|  |  |  |  |  |
| 1. one half | 2. one half | 3. one half | 4. one half | 5. one half |
|  |  |  |  |  |
| 6. one quarter | 7. one quarter | 8. one quarter | 9. one quarter | 10. one quarter |
|  |  |  |  |  |
| 11. one third | 12. one third | 13. one third | 14. one third | 15. one third |
|  |  |  |  |  |
| 16. one fifth | 17. one fifth | 18. one sixth | 19. one sixth | 20. one sixth |
|  |  |  |  |  |
| 21. one eighth | 22. one eighth | 23. one ninth | 24. one tenth | 25. one tenth |

45

T₁

Materials:
Fraction Memory
game cards

Gather the children together at the front of the classroom so that they can all see the demonstration. A book corner or story area with mats on the floor for the children to sit on is a good place for mathematics demonstrations.

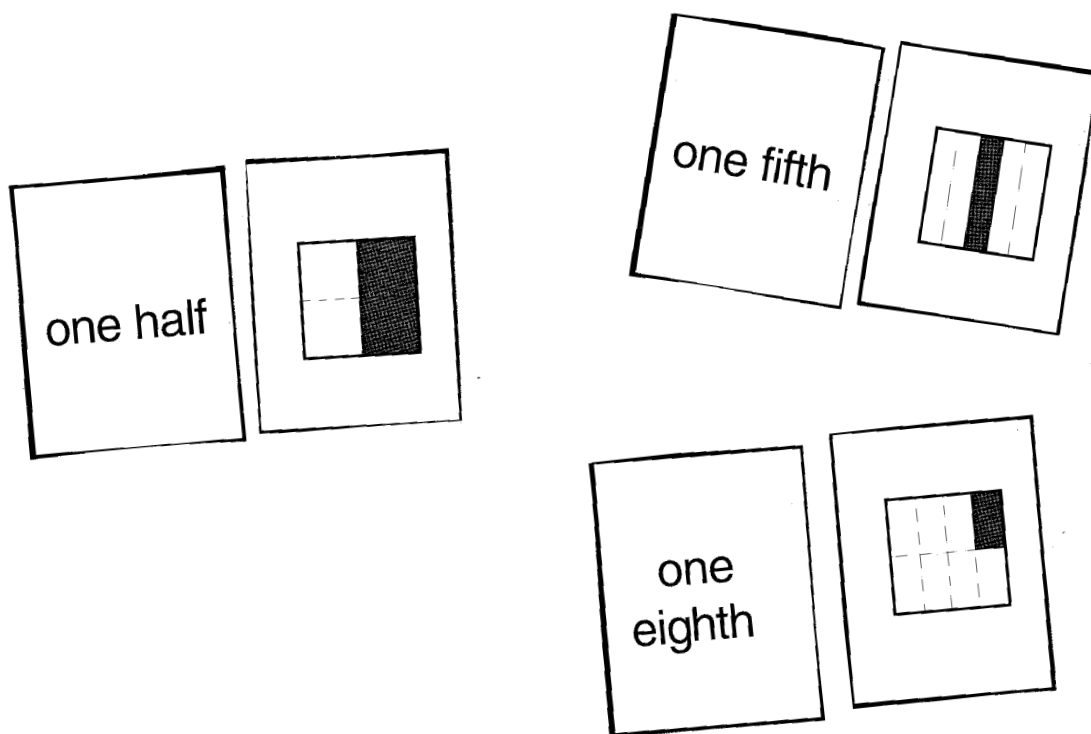
Show the fraction picture cards.

Ask the children to name each shaded part.

Remind them that if there are five equal parts then each part is called one fifth.

If there are six equal parts then each part is called 'one sixth' and so on.

Ask the children to match each fraction picture with its name.



C₁

Materials:
one set of Fraction
Memory game cards
for each group

Let the children sit together in groups of three or four.
Give each group a set of fraction memory game cards.
Let the children play the memory game.



Can all the children recognise and make fractions up to one tenth using objects and drawings?

T₂

Gather the children together so that they can all see the collection of objects.

Place the collection of objects on a mat.

Ask one of the children to count the bottle tops. There should be twelve.

Now ask two children to share them. There should be six each.

Lay the bottle tops side by side so that the children can see that the sets are the same size.

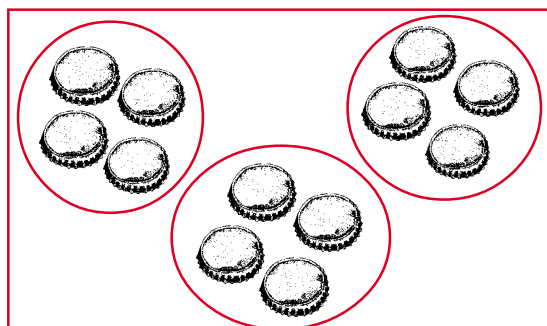
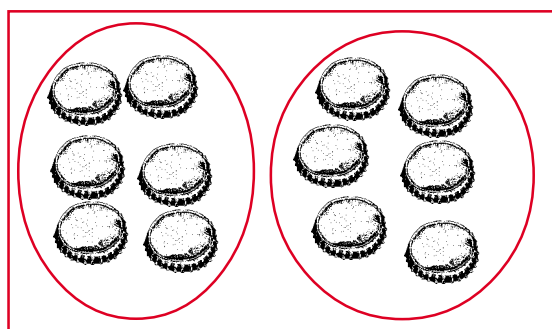
Explain that each set of six is half the whole set.

Repeat with the other objects.

Repeat by dividing the objects into thirds, quarters and sixths.

Materials:

twelve bottle tops,
shells, smooth stones,
seeds, etc

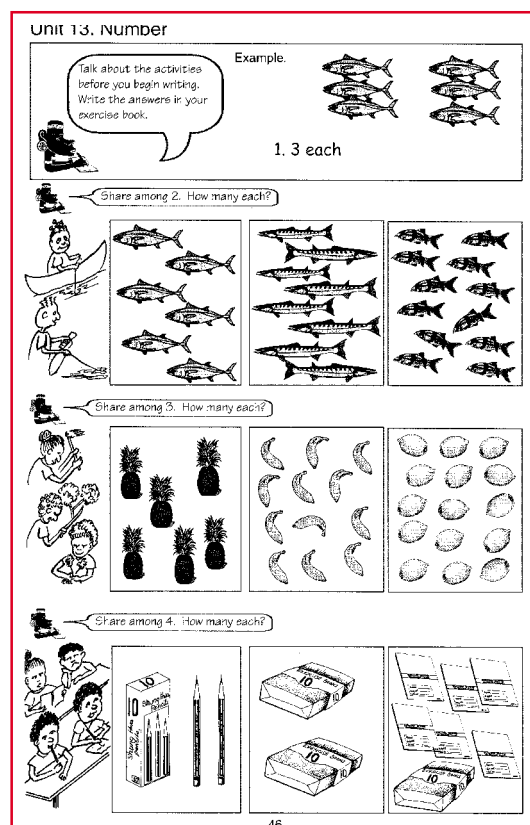


C₂

The children complete the activities in their resource book, page 46.

Talk about the activities before the children start to write.

Materials:
children's resource
book, page 46



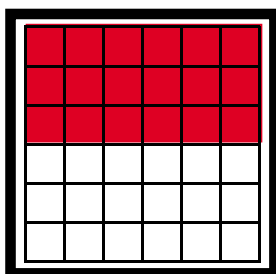
T₂

Materials:
one Fraction Board
and one set of 36
small squares

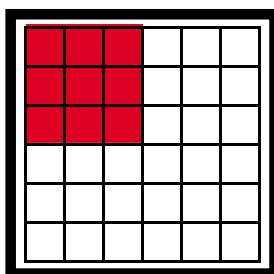
Show the fraction board. Ask,
"How many small squares are there?"
Take away half. Ask,
"What fraction is left? How many squares is that out of 36?"

Put all the squares back in the frame.
Take away two thirds. Ask
"What fraction is left? How many squares is that out of 36?"

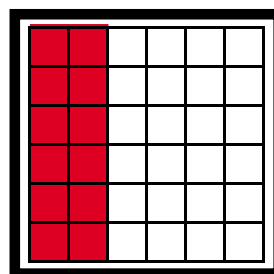
"How many should I take away to leave one quarter?"
One third.
One sixth?"



half of 36 is 18



one quarter
of 36 is 9



one third
of 36 is 12



C₂

Materials:
one Fraction Board
and one set of 36
small squares for each
group

Let the children work in groups of three or four.
Give each group a set of 36 Fraction Board cards.

Ask each group to divide their cards into halves, thirds, quarters
and sixths by sharing among two, three, four and six.

The groups should lay out their cards in equal groups.

You could make this activity into a game. Ask,
"How many in one quarter of 36?"

The children have to lay out their cards and then put up their
hands when they have the answer.
The first group to answer correctly wins a point.



Can all the children find a fraction of a quantity by dividing?

Extra activities

Support

Give each child a 12 square snake.

Ask the children to fold their snake into two equal parts.

Ask,

"How many squares are in each part?"

"What is each part called?"

Ask them to fold their snake into three equal parts.

Ask,

"What is each part called?"

"How many squares are there in each part?"

Repeat for quarters and sixths.

Materials:

One 12 Square Snake
for each child

Use a collection of bottle tops, seeds, shells etc.

Ask the children to count out a set of 12 bottle tops and place them on a table.

Ask them to turn over half.

Ask them to turn over one quarter, one third and one sixth.

Repeat with 16 seeds, 10 shells, etc.

Materials:

a collection of bottle
tops, seeds, shells,
etc

Extra activities

Extension

Ask the children to investigate and find out how many classes in the school have exactly one half boys and one half girls.

Ask them to research and find out how many families in their class have exactly one half boys and one half girls. (eg 2 boys + 2 girls in a family of 4 children).

Ask them to investigate and find out what fraction of the children in the class have a dog at home.

Materials:

children's exercise
books

Time Topic 25: Reading clocks

Aim:

to teach the children to tell the time in hours and minutes and to calculate the interval between two times

Sequence of objectives:

1. to teach the children to read the time in minutes to and minutes past the hour
2. to practise calculating the interval between two given times in hours and minutes
3. to give the children practise in drawing clock faces to show specific times.

A proper classroom clock should be used wherever possible. Cardboard clocks are provided in the Nguzu Nguzu cards pack. These should be stuck to cardboard to make them stronger. The hands can be fixed on using two buttons sewn together or a piece of fishing line knotted at both ends.

T₁

Materials:

a real clock or a card
Nguzu Nguzu
Classroom Clock with
moving hands

Gather the children together on a mat at the front of the classroom so that they can all see.

Revise o'clock and half-past times by setting the hands of the clock and asking the children to tell the time.

Set the clock to a quarter past 12.

Ask if any children can tell this time.

Set the clock to a quarter to 1.

Ask if any children can tell this time.

Explain a quarter past and a quarter to.

Set the clock to different times such as a quarter past six, a quarter to eight, half past three and seven o'clock.

Ask the children to tell the times.



Let the children work in groups of three or four.
Give each group a Classroom Clock.
Ask each group to set the clock to the following times.

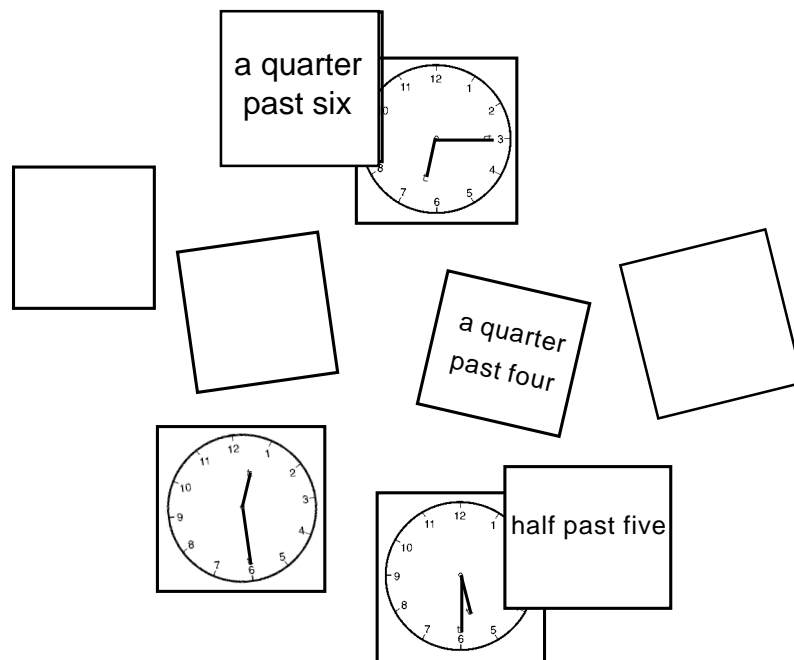
*"Four o'clock
Eight o'clock
Half past two.
Half past ten.
A quarter past one.
A quarter to seven.
A quarter past five
A quarter to eleven."*

Check that each group can set their clock correctly.
Continue practising with other times.

Materials:
one Classroom Clock
for each group

Let the children work in groups of three or four.
Give each group a set of Match the Time cards.
First ask the children to match up the cards correctly.
Next let them play the Memory Game.

Materials:
Match the Time
memory game cards



Can all the children read the time in minutes to and minutes past the hour

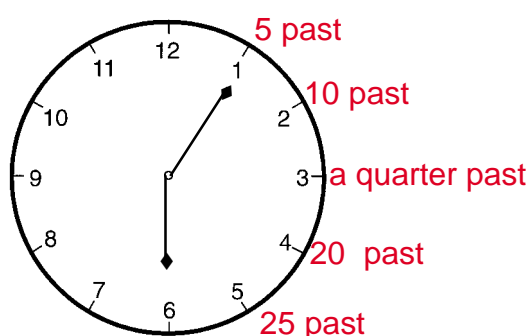
T₁

Materials:
a real clock or a
Nguzu Nguzu
classroom clock

Teach about minutes past the hour.
Gather the children together on a mat at the front of the classroom so that they can all see the clock.

Set the clock to 6 o'clock. Ask the time.
Set the clock to a quarter past 6. Ask the time.
Set the clock to 5 past 6. Ask the time.

Explain that there are 30 minutes between 6 o'clock and half past six.
Explain that the clock face is divided into periods of 5 minutes.
Count in fives from six o'clock, 5 past six, ten past sixto half past six.



Set the clock to 5 past, 10 past, a quarter past, 20 past, 25 past and half past. Ask the children to tell the time.

C₁


Materials:
children's resource
book, page 47

The children
complete the
activities in their
resource book,
page 47.

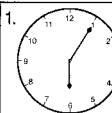
Time. Unit 14

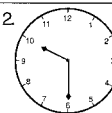
Talk about the questions with your teacher before you start writing. Write the answers in your exercise book.

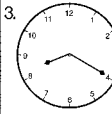
Example.

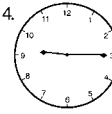
1.  five past six


Write the correct time for each clock.


1.  a quarter past five
five past six
ten past five

2.  twenty past two
ten past four
half past ten


3.  half past four
ten past eight
twenty past eight


4.  ten past nine
a quarter past ten
a quarter past nine


5.  five past eleven
ten past ten
twenty five past eleven

6.  a quarter past six
ten past three
five past six

Write true or false for each time.

7.  It's ten past four.

8.  It's five past six.

9.  It's twenty past one.

Write the correct time for any false ones.

T₁

Teach about minutes to the hour.

Gather the children together on a mat at the front of the classroom so that they can all see the clock.

Set the clock to twelve o'clock. Ask the time.

Move the minute hand back five minutes to show five to twelve. Ask the time.

Make sure the children understand that it is five **to** twelve.

Move the minute hand back ten minutes to show ten to twelve. Ask the time.

Repeat for a quarter to, twenty to and twenty five to twelve.

Count back in fives from 5 to twelve to 25 to to twelve.

Set the clock to a variety of times, such as five to six, ten to seven, twenty five to eight and twenty to nine. Ask the children to tell the time.

Materials:
a real clock or a
Nguzu Nguzu
classroom clock

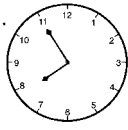
C₁

The children complete the activities in their resource book, page 48.

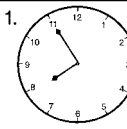
Unit 14. Time

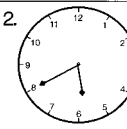
Talk about the questions with your teacher before you start writing. Write the answers in your exercise book.

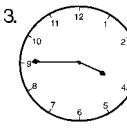
Example.

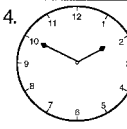
1.  five to eight


Write the correct time for each clock.

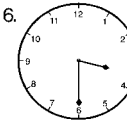
1.  ten to eight
five to eight
five to seven

2.  half past eight
twenty to six
twenty past six

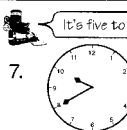
3.  ten to four
twenty to four
a quarter to four


4.  five to two
ten to two
ten to ten


5.  five to three
ten to three
a quarter past three

6.  five to ten
half past three
twenty five to five

Write true or false for each time.

7.  It's five to ten.

8.  It's ten to six.

9.  It's twenty to two.

Write the correct time for any false ones.

48

Materials:
children's resource
book, page 48

Unit 14

Materials:

Nguzu Nguzu Digital Display clock, scissors, glue, cardboard, split pins, buttons or fishing line

Make the Digital Display clock to use in this unit.

The Digital Display clock shows the time on a clock face and on a digital display.

Carefully cut out the clock hands and digital display wheels.

Cut out the windows on the digital clock.

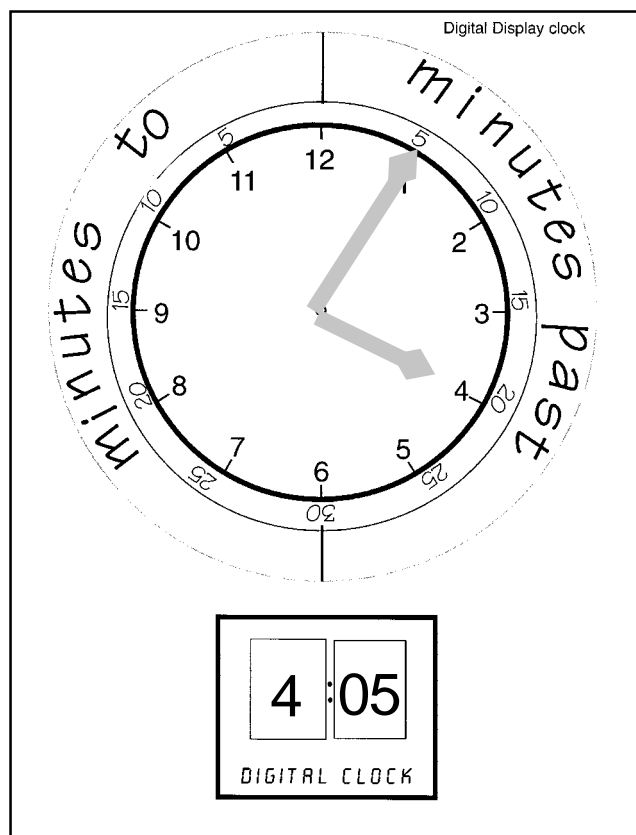
Paste all the pieces to cardboard to make them strong.

Fix the hands of the clock so that they can be moved.

Use two buttons sewn together or some thick fishing line with knots at each end.

Fix the wheels of the digital clock in the same way, so that they can be turned.

The digital hours and minutes should be seen through the display window.



T₁

Use the digital display clock.
Gather the children together so that they can all see.

Explain that there are different types of clock which show the time in different ways.

One way of showing the time is on a clock with hands.
Another way is by using a digital clock.

A digital clock uses numbers only.

Set the hands of the clock to **3 o'clock**.

Set the digital clock to **3:00**.

Explain that **3:00** means **3 o'clock**.

:00 means no minutes past 3 o'clock.

Set the hands of the clock to **5 past 3**.

Set the digital clock to **3:05**.

Explain that the **3:** means 3 o'clock and **:05** means 5 minutes past.

Continue setting the clock to a variety of times showing **MINUTES PAST** only.

Materials:
Digital Display clock


C₁

The children complete the activities in their resource book, page 49.



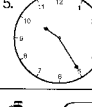




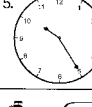
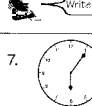


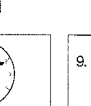
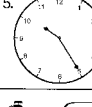
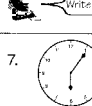
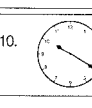

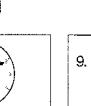
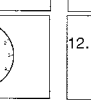
Unit 14. Time

Talk about the questions with your teacher before you start writing. Write the answers in your exercise book.







Example

1.  4:05

Write the correct time shown on each clock.

| | |
|--|---|
| 1.  4:10
 4:15
 4:05 | 2.  6:20
 6:15
 6:25 |
| 3.  10:90
 9:10
 9:20 | 4.  8:20
 7:20
 4:00 |
| 5.  10:05
 10:25
 10:10 | 6.  5:05
 11:05
 11:10 |

Write the time shown on each clock.

| | | |
|---|---|--|
| 7.  | 8.  | 9.  |
| 10.  | 11.  | 12.  |

Materials:
children's resource book, page 49



Can all the children read the time in minutes past and minutes to the hour?

T₂

Materials:
Selo the
Fisherman
storybook,
blackboard

Read the story Selo the Fisherman.

When you have finished, ask questions about the story. Ask,
"What time was it when Selo started fishing?"

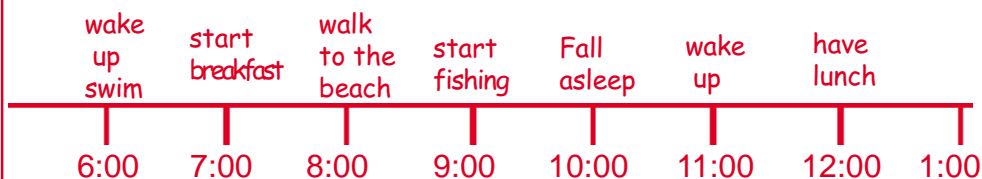
What time did he fall asleep?

How long did he spend fishing?

What time did he wake up?

How long was he asleep?"

Draw a time line on the blackboard to show Selo's day.



Use the time line to show how long Selo spent on each activity.
Ask questions about the time line.

Make a time line for the children's day at school.

Ask questions about the time line.

C₂

Materials:
children's resource
book, page 50

Talk about the pictures
in the children's resource
book, page 50.

Ask,
*"What time does
the activity start?"*



What time does it finish?





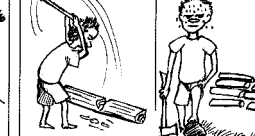

How long does it take?"



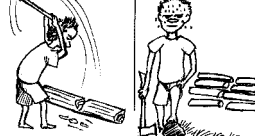

Time. Unit 14







How many minutes does each activity take? Talk about the pictures before you start writing.





Example.





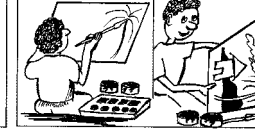

1.   1. 10 minutes



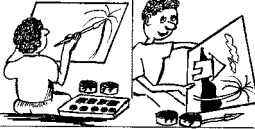

1.      

2.    

3.      

4.    

5.      

6.    

T₂

Gather the children together on a mat at the front of the classroom so that they can all see the Digital Display clock.

Count in fives around the clock face, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55. Turn the digital minute wheel to show 05, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55.

Set the clock to 12:00. Ask,

"What time is it?"

"What time will it be in 20 minutes?"

Count in fives and set the clock to 12:20.

Set the clock to 12:00 again. Ask

"What time is it?"

"What time will it be in 30 minutes?"

Count in fives and set the clock to 12:30.

Reset to 12:00. Ask,

"What time will it be in 35 minutes?"

Count in fives and set the clock to 12:35.

Repeat for different times.

Materials:

Digital Display clock

C₂

Talk about the pictures in the children's resource book, page 51.

Ask,

"What time does the activity start?"


"What time does it finish?"



"How long does it take?"

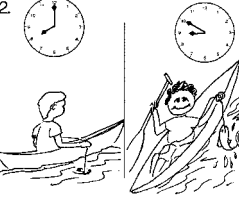

Unit 14. Time

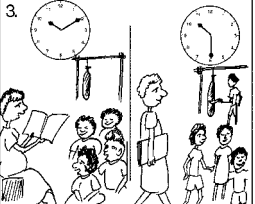

How many minutes does each activity take?
Talk about the pictures before you start writing.

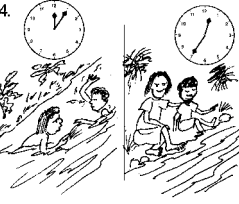

Example.



1.  1. 45 minutes

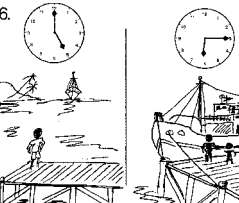

1.  

2.  

3.  

4.  

5.  

6.  

Materials:

children's resource book, page 51

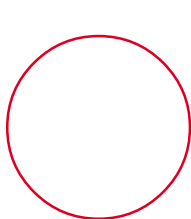


Can all the children calculate the interval between a start and finish time in hours and minutes?

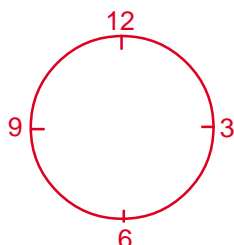
T₃

Materials:
blackboard

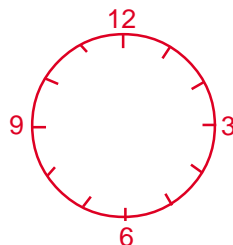
Show the children how to draw a simple clock to show ten past four.



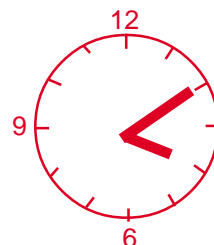
1.
First draw
a circle



2.
Mark the
numbers 12,
3, 6 and 9



3.
Mark where
the other
numbers go



4.
Draw the
hands

C₃

Materials:
children's resource
book, page 52

Ask the children to
do the activities in
their resource
book, page 52.

This activity is for
the children to
practise drawing
the hands in the
correct position to
show a given time.

Make sure the
children do not
waste time
drawing perfectly
round clock faces.
They must draw
simple, quick clock
faces.

Unit 14. Time

Example.

1.

Talk about the questions with your teacher before you start writing. Write the answers in your exercise book.

Draw clocks to show these times.

| | |
|--------------------------|---------------------------------|
| 1. One hour later. | 2. Ten minutes later |
| 3. Twenty minutes later | 4. Fifteen minutes later. |
| 5. One hour before. | 6. Twenty five minutes before. |

Draw clocks to show these times.

| | | |
|--|--|------------------|
| 7. Half past twelve. | 8. 3:30 | 9. 3:35 |
| 10. Five past six. | 11. 6:55 | 12. Ten to nine. |
| 13. The time you woke up this morning. | 14. The time it will be in twenty minutes. | |



Can all the children draw clock faces to show specific times?

Extra activities

Support

Use the Digital Display clock.

Set the digital time.

Show it to the children and ask them to read it.

Ask the children to set the hands of their classroom clock to show the same time.

Repeat with different times.

Ask the children to set the hands of their classroom clock to show different times such as,

a quarter past eight

ten past seven

twenty to nine

two twenty five

Let the children play the memory game with the Match the Time cards in groups of three.

Materials:

one classroom clock
for each child, Digital
Display clock

Materials:

Match the Time
cards

Extra activities

Extension

Show the children the classroom time table.

Ask questions about the timetable, such as,

"What time does the first lesson start?"

What time does it finish?

How many minutes is that?"

Ask the children to calculate how long the class spends on each activity each day.

Let the children use classroom clocks to set the starting and finishing times of each lesson.

They can count the interval in minutes using the clocks.

Materials:

class timetable,
classroom clocks

Number topic 14: Introducing fractional notation

Aim:

to introduce the way fractions are written as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc and to introduce mixed numbers such as $1\frac{1}{2}$, $1\frac{1}{4}$, etc

Sequence of objectives:

1. to teach the children to recognise that $\frac{1}{2}$ means one part out of 2 equal parts, that $\frac{1}{3}$ means one part out of 3 equal parts, etc
2. to practise placing fractions on a number line
3. to practise placing mixed numbers on a number line.

In this unit the children learn that fractions such as one half mean one part out of two equal parts and are written, $\frac{1}{2}$.

The lower number in the fraction notation tells how many equal parts the whole has been divided into.

T₁

Materials:

paper circles, squares and rectangles

Show the children one paper circle.

Explain that this is a whole circle. It is a whole one.

Fold the circle in half. Open it up and ask,

"How many parts are there?"

"Two."

Write 2 in each half. Ask,

"Are the parts equal?"

"Yes."

"What is each part called?"

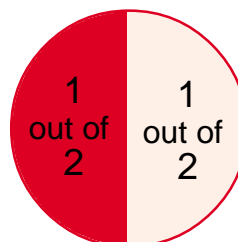
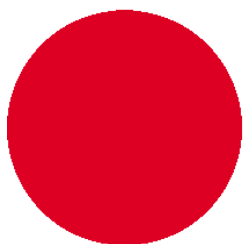
"One half."

Show one half. Write 1 out of 2 on the half.

Write 1 out of 2 on the other half as well.

Explain that each half is one out of two equal parts.

Repeat with different shapes such as squares and rectangles.



Explain that another way to write one out of two is $\frac{1}{2}$.

$$\frac{1}{2} \quad \frac{1}{2}$$



Give each group some small paper circles, rectangles and squares.

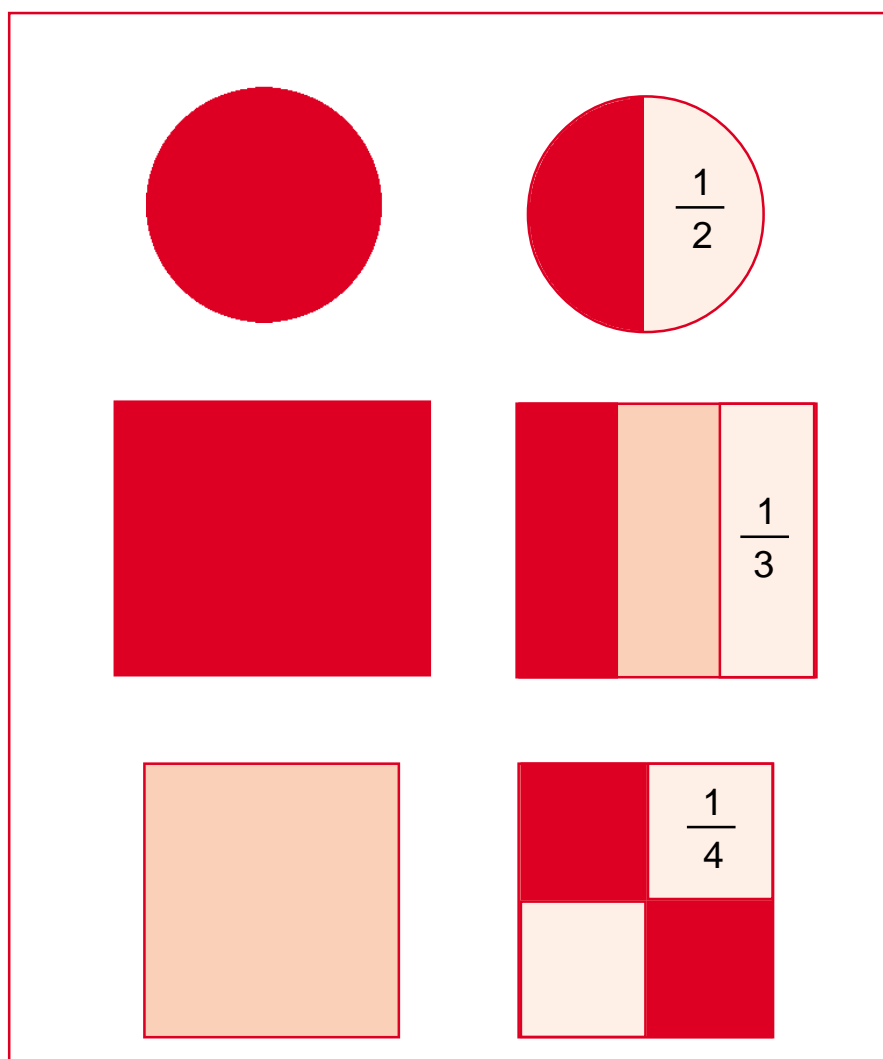
Ask each group to fold their shapes into two, three or four equal parts.

Ask them to write $\frac{1}{2}$, $\frac{1}{3}$, or $\frac{1}{4}$ on each part.

Ask the children to colour each part of their shape.

Put the shapes on display on the classroom wall.

Materials:
small paper circles,
rectangles and
squares,
coloured pencils or
crayons



T₁

Materials:
Fraction Write
memory game cards

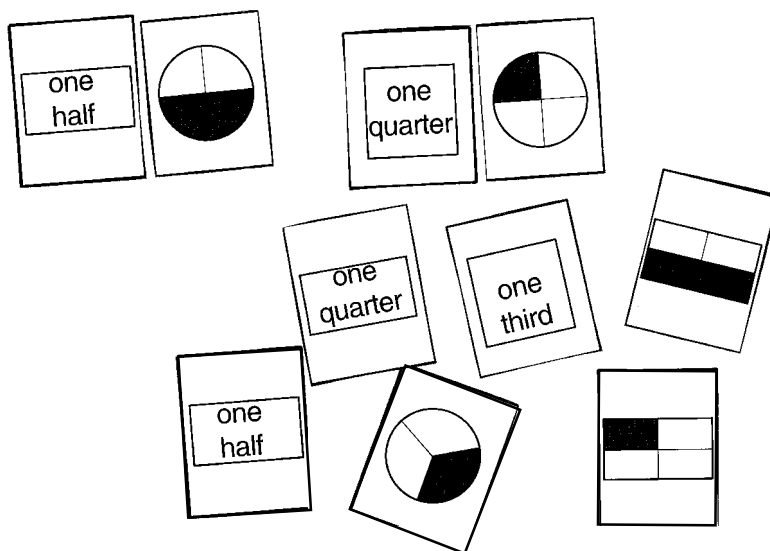
Gather the children together at the front of the classroom.
Let them sit on mats so that they can all see your demonstration.

Lay out all the Fraction Write memory game cards.
Show the $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$ cards. Ask,

"How many equal parts are there in each fraction?
How many parts are shaded?"

Match up the cards.

Show that the card that matches $\frac{1}{2}$ has two equal parts, the card that matches as $\frac{1}{3}$ has three equal parts and the card that matches $\frac{1}{4}$ has four equal parts.



C₁

Materials:
Fraction Write memory
game cards

Let the children work together in groups of three or four.
Give each group one set of Fraction Write memory cards.

First ask the children to match up all the cards. Make sure they
can do this.

Next ask them to play the memory game.

T₁

Draw some circles, squares and rectangles on the blackboard.
Ask one of the children to shade one half of a circle.
Ask them to write one half beside the circle.

Materials:
blackboard

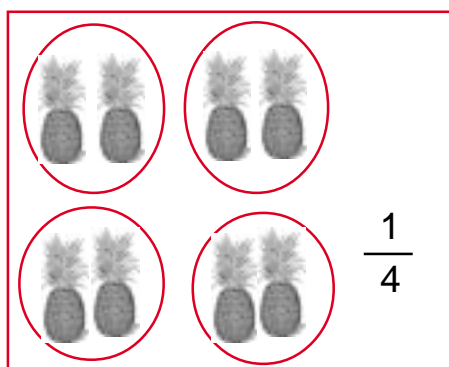
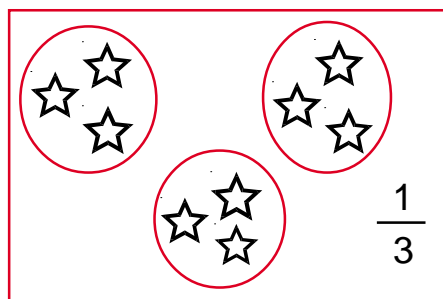
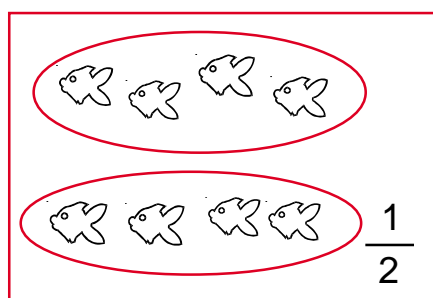


Ask other children to shade $\frac{1}{3}$ and $\frac{1}{4}$ of different shapes.

Draw sets of fish, pineapples, stars etc.
Ask one of the children to draw a circle round half the fish. Ask them to write $\frac{1}{2}$ beside the set.

Ask others to draw circles round one third of the pineapples and one quarter of the stars.

Ask them to write $\frac{1}{3}$ and $\frac{1}{4}$ beside each set.



Materials:
children's resource
book, page 53

The children complete the activities in their resource book, page 53.

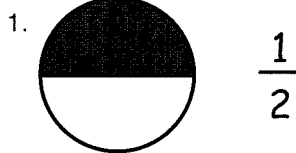
Talk about the activities before the children begin to write.

Unit 15. Number

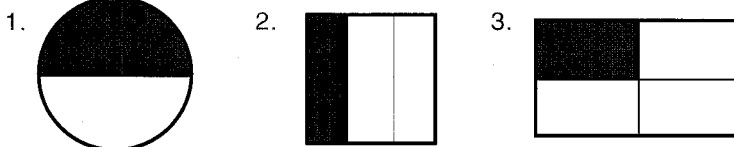
Talk about the fractions.
How many equal pieces are there?
How many are red?
Write the fractions in your
exercise book.



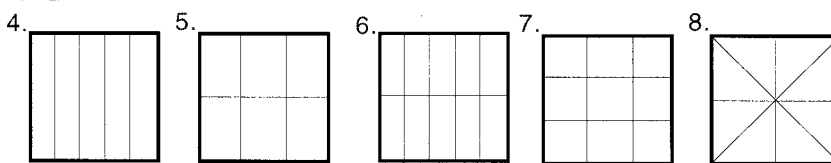
Example.



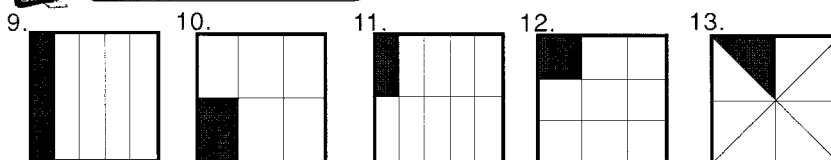
Write the fraction that is red.



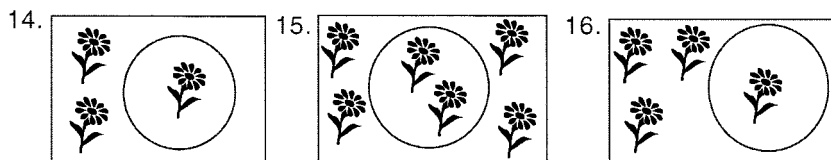
How many equal parts are there?



Write the fraction that is red.



What fraction is in the circle?



Draw circles and colour these fractions.



Can all the children recognise and write fractions as $\frac{1}{2}$, $\frac{1}{3}$ or $\frac{1}{4}$?

T₂

Draw a number line on the blackboard.



Ask individual children to come out and show where $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ should be on the number line.



Materials:
blackboard

C₂

Give each child three strips of paper or card from the store.
Ask the children to make each strip into a number line from 0 to 3.



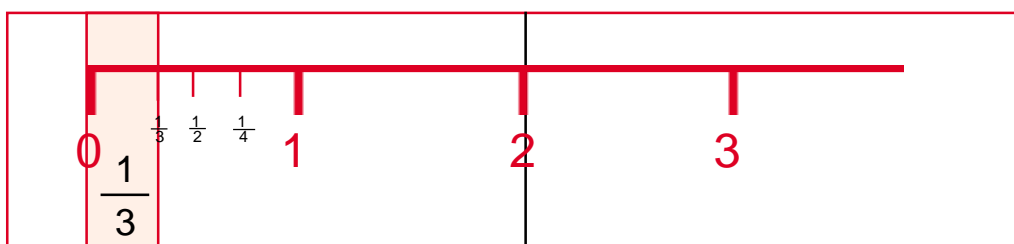
Materials:
strips of paper or
cardboard from boxes
from the store

Now ask them to fold a number line and mark $\frac{1}{2}$.

Repeat for $\frac{1}{3}$ and $\frac{1}{4}$.

Ask the children to colour the number lines.

Display the number lines on the classroom wall.



Can all the children place fractions on a number line?

T₃

Materials:
blackboard

Draw a number line on the blackboard.



Ask the children where one half should be. Ask one child to mark $\frac{1}{2}$ on the number line.

Ask what number should go halfway between 1 and 2 .

Encourage the children to answer ,

"One and a half,"

or $1 \frac{1}{2}$.

Mark $1 \frac{1}{2}$.

Repeat for $2 \frac{1}{2}$ and $3 \frac{1}{2}$.



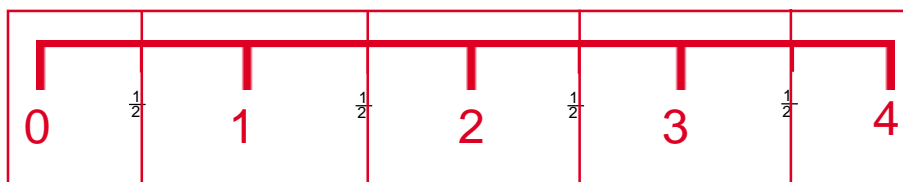
C₃

Materials:
paper or card strips

Let the children work in twos.

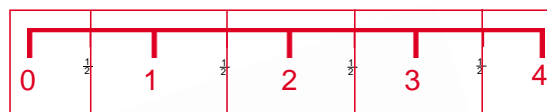
Ask them to draw a number line on their paper or card strip.

Ask them to fold the number line to find $\frac{1}{2}$, $1 \frac{1}{2}$, $2 \frac{1}{2}$ and $3 \frac{1}{2}$.



Ask the children to measure objects in the classroom, using the number line.

The pencil is $3 \frac{1}{2}$.



Can all the children place mixed numbers on a number line?

Extra activities**Support**

Play fraction bingo using the Fraction Bingo cards.

The children make a bingo card with four fractions from this list.

$\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{7}$, $\frac{1}{8}$, $\frac{1}{9}$, $\frac{1}{10}$, $1\frac{1}{2}$, $2\frac{1}{2}$ and $3\frac{1}{2}$.

Cut out the Fraction Bingo cards and mix them up.

Pick one Fraction Bingo card and show it.

If the children have it on their card they tick the fraction.

The first child to tick all four of their bingo fractions shouts 'Bingo' and wins the game.

Let the children play the game themselves in groups of four.

| | |
|---------------|----------------|
| $\frac{1}{8}$ | $1\frac{1}{2}$ |
| $\frac{1}{3}$ | $\frac{1}{4}$ |

Materials:

Fraction Bingo cards

Extra activities**Extension**

Ask the children to investigate how much time they spend on different subjects at school each day.

Let them use the class timetable to find out how much time they spend on each subject.

Ask them to write the times in hours and fractions of an hour.

For example.

Maths $1\frac{1}{4}$ hours

English $1\frac{1}{2}$ hours

Community Studies $\frac{1}{2}$ hour

Materials:

class timetable

Money Topic 26: Computation of money

Aim:

to allow children to practise the computation of money through practical activity

Sequence of objectives:

1. to teach the children to add and subtract prices
2. to teach the children to calculate change
3. to practise expressing amounts in different combinations of coins and notes.

This unit should engage the children in practical activities such as playing card or board games and shopping role play at a classroom store or market. Card or paper coins and notes should be used for practical activities. Clean, empty cans, jars, boxes and packets should be used for role play. Pictures of fruits and vegetables can also be used.

T₁

Materials:

a collection of empty sweet packets with prices marked up to \$1.00 (these can be pasted to a chart)

Gather the children together to sit on mats at the front of the classroom so that they can all see and take part in the lesson.

Lay out the materials or paste them to a chart.

First ask the children to tell you the price of each item.

Next ask the children to tell you the price of two items, for example, ask,

*"How much is a lolly and a packet of chewing gum?
What is the price of a packet of Twisties and a tattoo?" etc.*

The children add the prices in their heads.

Show the children that 100 cents equals one dollar.

The children complete the activities in their resource book page 54.

Talk about the activities before the children start.

Let the children use paper coins to make the totals.

They write the answers in their exercise books.

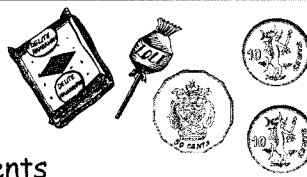
Materials:
children's resource
book, page 54

Money. Unit 16

Use coins to find the total.
Write the answers in your exercise book.
Remember that 100 cents is one dollar.



Example.



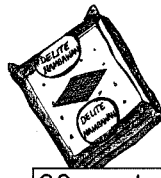
1. 70 cents



70 cents



10 cents



60 cents



30 cents



20 cents

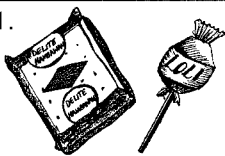


40 cents



80 cents

1.



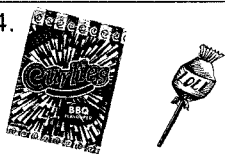
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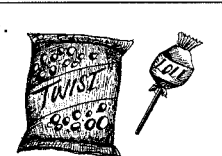
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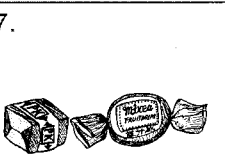
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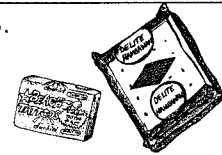
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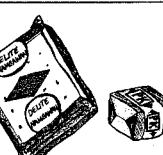
7.



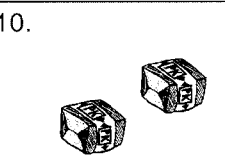
8.



9.



10.



11.



12.



T₁

Materials:
Market poster

Gather the children together so that they can all see the poster.
Ask questions such as
"How much are the peanuts?"
"How much is the banana?"
"What costs 50 cents?" etc.

Ask the children how much the pumpkin costs. Explain that one dollar is the same as 100 cents.
Ask how much the pepper costs.
Ask which costs more, the pumpkin or the pepper.
Ask how much more the pumpkin costs.

Show that the difference can be found by counting on from 80 to 100.

Continue asking the children to find the difference in price by counting on. For example, ask,
"What costs more, the tomato or the mango."
"How much more?"
"How much more is the banana than the lime?"

C₁

Materials:
children's resource
book, page 55

Ask the children to
complete the activities
in their resource book,
page 55.

Talk about the
activities before the
children begin.

Let them use paper
coins to help with the
activities.

Unit 16. Money

Use coins to find the difference.
Which costs more?
How much more?

Example.
1. The banana costs 10 cents more

| | | |
|-----|-----|-----|
| 1. | 2. | 3. |
| 4. | 5. | 6. |
| 7. | 8. | 9. |
| 10. | 11. | 12. |



Can all the children add two prices to find a total and find the difference between two prices by counting on?

T₂

Gather the children together so that they can all see.
The reading corner is a good place for this.

Show the collection of objects and talk about their prices.
Take one object, for example, a packet of Curlies at 80 cents. Ask,
"I want to buy a packet of Curlies.
I give the storekeeper a one dollar coin.
What change should I get from my one dollar?"

Remind the children that one dollar is the same as 100 cents.
Encourage the children to count on from 80 cents to one hundred cents in tens.
The change is two tens or 20 cents.

Repeat with other objects and calculate change by counting on in tens.

Materials:
a collection of empty tins, jars and packets, with prices marked

C₂

The children complete the activities in their resource book, page 56.



Talk about the activities before the children begin.

Let them use paper coins to help with the activities.

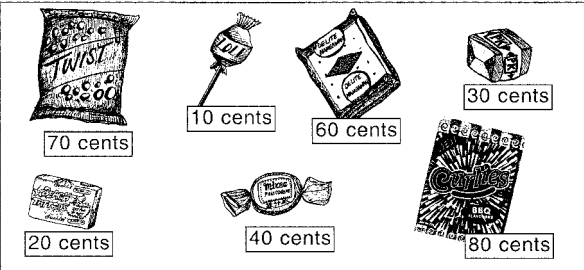
Unit 16. Money

























Find how much change there should be. Count on in tens. One dollar is 100 cents.

Example.

You have  You buy 

1. 20 cents change



| | | |
|--|--|--|
| 1. You have  You buy  | 2. You have  You buy  | 3. You have  You buy  |
| 4. You have  You buy  | 5. You have  You buy  | 6. You have  You buy  |
| 7. You have  You buy  | 8. You have  You buy  | 9. You have  You buy  |
| 10. You have  You buy  | 11. You have  You buy  | 12. You have  You buy  |

Materials:
children's resource book, page 56



Can all the children find the correct change in simple computations by counting on in tens?

T₃

Materials:

paper coins, clean, empty packets, jars, cans and drawings of fruits and vegetables with prices marked in dollars and cents up to five dollars

Gather the children together so that they can all see.

Place an empty packet in the middle of the group.

Ask what price it is, for example, 30 cents.

Ask one child to find the correct coins to make 30 cents.

Name each coin and count the total.

Now ask another child to make 30 cents with a different set of coins. Repeat until three or four different ways have been shown.

Repeat for different objects costing 50 cents, 60 cents etc.



C₃

Materials:

a set of coins for each group, a collection of clean, empty packets, jars, cans and drawings of fruits and vegetables with prices marked in dollars and cents up to five dollars

The children work in groups of three or four.

Show one of the packets, such as a box of matches costing 50 cents.

Give about 30 seconds for each group to make 50 cents in as many different ways as they can, such as

| | | | | |
|-----|-----|-----|-----|-----|
| 10c | 10c | 10c | 10c | 10c |
| 20c | 20c | 5c | 5c | |
| 20c | 20c | 10c | | |
| 20c | 10c | 10c | 5c | 5c |

After about 30 seconds stop the children.

The group which has made 50 cents in most ways wins one point. Repeat with objects of different prices, such as 40 cents, 70 cents \$1.20, \$3.50 etc.



Can all the children make an amount using different combinations of coins and notes?

Extra activities

Support

Make a collection of clean empty packets, jars and tins.
Draw fruits and vegetables as well.
Put prices on everything.

Let the children play shopping.
One or two children could be the shopkeeper

Make shopping lists.
Let the other children ask for the items on their lists.

The shopkeepers must find the total and give the correct change.

Materials:

paper coins, clean, empty packets, jars, cans and drawings of fruits and vegetables with prices marked in dollars and cents up to five dollars

Extra activities

Extension

Help the children to make their own card and board games to practise adding prices, selecting the correct coins and giving change.

Materials:

paper coins, paper, card, coloured pencils or crayons

| | | | | | |
|---|---|---------------------------------|--|--|--------------------|
| 1
Start
→ | 2
You forget your basket.
Miss a turn. | 3
Pick a card.
 | 4
You forget your purse.
Miss a turn. | 5
Pick a card.
 |
spinner |
| 14
You earn 50 cents for cutting wood. | SHOPPING GAME
Rules
1. One player is the shopkeeper.
2. The others start with \$5.00.
3. Take turns to spin and move your counter round the board.
4. Follow the instructions on the board and cards.
5. The player who spends most money wins the game. | | | 6
You lose 80 cents. | |
| 13
Pick a card. | | | | 7
You earn 50 cents for carrying water. | |
| 12
You earn 80 cents by selling coconuts. | 11

Pick a card. | 10
You lose 50 cents. | 9
Pick a card. | 8
You forget your shopping list.
Miss a turn. | |

Buy:

 20 cents

Buy:

 30 c

Buy:

 70c
 40c

Number topic 15: Developing fractions

Aim:

to teach about the relative sizes of fractions.

Sequence of objectives:

1. to teach children to recognise fractions on a chart
2. to teach children how to order and compare the relative sizes of fractions.

In this unit, children learn more about fractions in their visual and written form. A fraction chart is used as a visual teaching aid so that children can compare the relative sizes of a half, a third, a quarter, etc. of an object. Examples of common objects from daily life should also be cut or folded into different fractions for comparison.

T₁**Materials:**

four strips of paper, one piece of card from the store

Revise the work you have done on fractions. Make sure the children can recognise that, for example, one quarter is one of four equal parts of a whole and that it is written $\frac{1}{4}$.

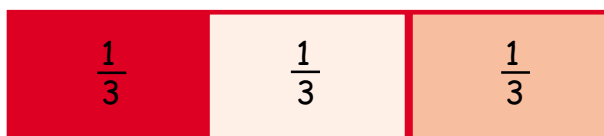
Show the first strip of paper.
Explain that it is a whole strip.
Write 'one whole' on it.

one whole

Fold the second strip into two equal parts.
Ask what each part is called.
Colour each part and write $\frac{1}{2}$ on each.



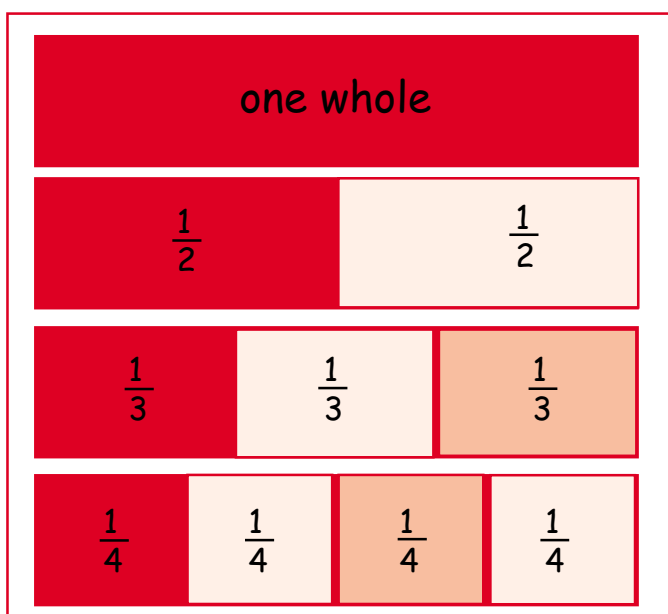
Fold the third strip into three equal parts.
Ask what each part is called.
Colour each part and write $\frac{1}{3}$ on each.



Fold the fourth strip into four equal parts.
Ask what each part is called.
Colour each part and write $\frac{1}{4}$ on each.



Paste the strips to the card. Point and ask questions about the chart you have made, such as
"What fraction is this?"
"Where is one quarter?" etc.



C₁

Materials:
four strips of paper
for each child, one
piece of card

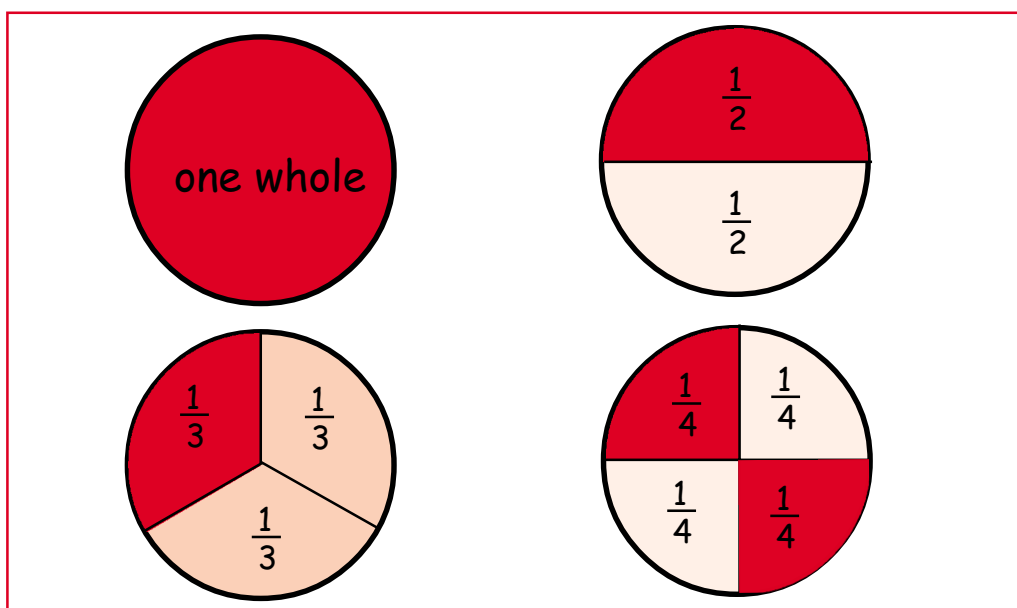
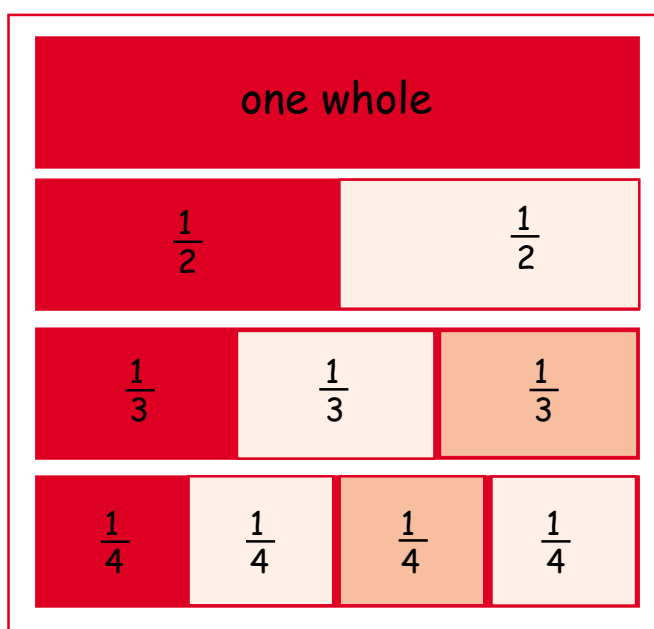
This activity can be done in groups if you do not have enough paper.

Ask the children to make their own small fraction chart.

Ask them to fold the paper strips and write one whole, $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$.

Ask them to shade each fraction a different colour.
Ask them to paste the strips on so that they can be folded.

Display the fraction charts on the classroom wall.



T₁

Paste the fraction chart to card from the store to make it stronger.

Cut out the pieces to leave the frame behind. Paste the frame to a piece of card.

The fraction pieces should fit back into the frame.

You could also paste sand to the back of the pieces and stick them to a cloth board.

Gather the children together in the reading corner so that they can see the fraction chart.

Point and ask questions about the fractions shown on the chart.

Ask,

"What fraction is this?"

Where is one fifth?"

Where is one eighth?" etc.

Remove fractions from the chart and ask,

"What fraction is missing?"

Remove all the pieces. Ask different children to put them back in the correct place.

Materials:

Fraction Chart

C₁

Let the children work in groups of two or three.

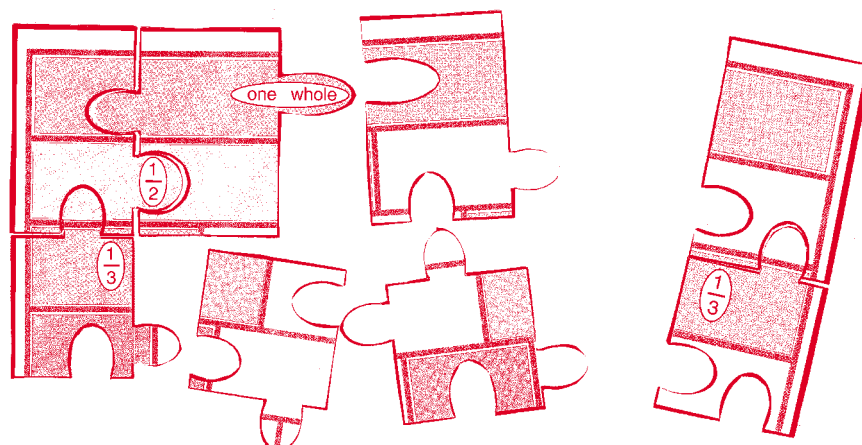
Give each group a Fraction Chart Jigsaw.

Ask the children to mix up all the pieces.

Let them take turns to make the chart by putting the pieces back together correctly.

Materials:

one Fraction Chart
Jigsaw for each
group



Can all the children recognise and name fractions on a chart?

T₂

Materials:
Fraction Chart

Gather the children together so that they can all see.

Show the fraction chart.

Ask questions such as,

"Who can point to one third?"

Where is one quarter?"

Which is bigger, one third or one quarter?"

Which is bigger, one half or one tenth?" etc.

C₂

Materials:
children's resource
book, page 57

The children
complete the
activities in their
resource book,
page 57.

Talk about the
activities before
the children start.

They should write
their answers in
their exercise
books.

Unit 17. Fractions

Talk about the fraction chart below.
What fraction is shown by each letter?
Write the fraction in your exercise book.

Example.

1. A = $\frac{1}{2}$

1. A = 2. B = 3. C = 4. D =

5. E = 6. F = 7. G = 8. H =

Write the fraction which is bigger.

9. $\frac{1}{2}$ $\frac{1}{4}$ 10. $\frac{1}{5}$ $\frac{1}{2}$ 11. $\frac{1}{6}$ $\frac{1}{4}$ 12. $\frac{1}{8}$ $\frac{1}{6}$

13. $\frac{1}{2}$ $\frac{1}{8}$ 14. $\frac{1}{10}$ $\frac{1}{6}$ 15. $\frac{1}{5}$ $\frac{1}{6}$ 16. $\frac{1}{10}$ $\frac{1}{3}$

Write the fraction which is biggest.

17. $\frac{1}{8}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{1}{6}$ 18. $\frac{1}{3}$ $\frac{1}{5}$ $\frac{1}{10}$ $\frac{1}{2}$



Can all the children compare the relative sizes of fractions on a chart?

Extra activities

Support

Revise the activities using the Fraction Chart and Fraction Chart Jigsaw.

Make a big Fraction Chart using card from the store.

Show one whole, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, etc.

Let the children investigate the chart by playing with it.

Materials:
Fraction Chart and
Fraction Chart
Jigsaw,
card from the store

Extra activities

Extension

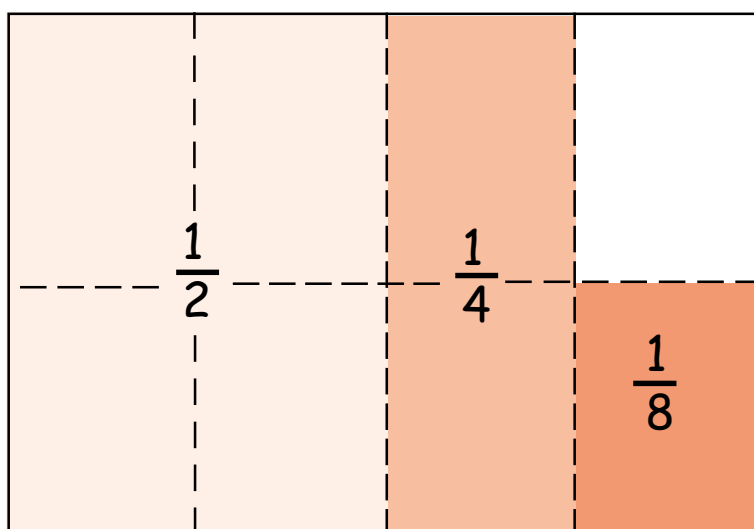
The children work in pairs.

Give each pair a rectangle of paper.

Ask them to make their own fraction chart by folding the paper into equal parts and shading each part.

They should write one whole, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, etc. on each fraction on their chart.

Materials:
paper, coloured
pencils or crayons



Shape Topic 17: Right angles

Aim:

to teach the children to recognise right angles in common shapes and use right angles to make patterns

Sequence of objectives:

1. to teach the recognition of right angles as square corners
2. to practise making right angles by folding paper
3. to identify shapes which have right angles
4. to use right angles to make patterns.

In this topic the children develop their understanding of symmetry in practical activities and by investigating shapes and patterns. The children begin to learn about rotational symmetry by turning shapes to see how many times they fit into the same space.

T₁

Materials:

a large square and triangle cut from a carton from the store



Let the children sit together on mats at the front of the classroom so that they can all see.

Show the children the square.

Ask,

*"What is this shape called?
How many sides does it have?
How many corners?
What shape are the corners?"*

Show the children the triangle.

Ask,

*"What is this shape called?
How many sides does it have?
How many corners?
What shape are the corners?
How are these corners different from the corners of the square?"*

Explain that we call the corners of a shape **angles**.

Explain that we call the corners of a square **right angles**.



Show the children the cardboard square.
Ask them to identify similar shapes in the classroom.
Explain that these shapes all have right angles.
Point to the right angles.

Draw a table like the one below.
Ask the children to help you fill in four or five examples of shapes in the classroom which have corners which are right angles, smaller than right angles and larger than right angles.

Materials:
cardboard square,
blackboard,
children's exercise
books

| right angle | smaller than a right angle | larger than a right angle |
|---|----------------------------|---------------------------|
| door
window

exercise book

poster | book shelf | bench leg
open book |

Ask the children to make their own table in their exercise book.
Ask them to complete the table with their own examples from the classroom.



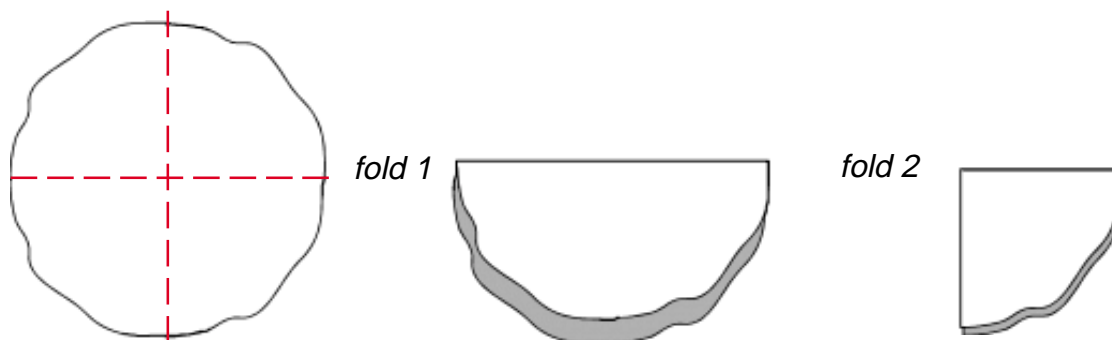
Can all the children recognise right angles as square corners?

T₂

Materials:
a large piece of strong
paper or card

Show the children how to make a square corner.
Take a piece of strong paper or card.
Fold it once in half along a straight line.
Fold it again in half along the straight line.

The corner is called a right angle.



Hold the square corner or right angle against a book, poster or door. Show that these have right angles too.

C₂

Materials:
strong paper or card

Give the children pieces of strong paper or card.

Ask them to carefully fold their paper to make a right angle.

Ask them to use the right angle to check each of the corners they found in activity C₁ to find if they really are a true right angle, smaller than a right angle or larger than a right angle.

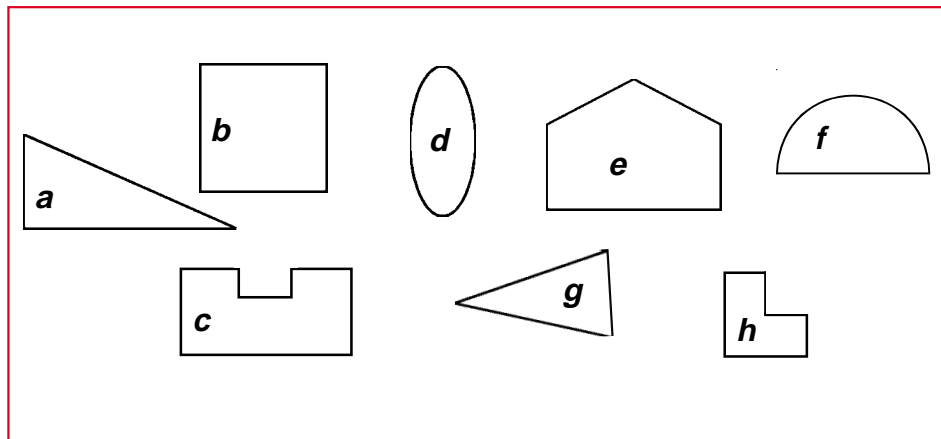


Can all the children make right angles by folding paper?

T₃

Draw a variety of different shapes on the blackboard.
Label the shapes **a**, **b**, **c**, etc.

Materials:
blackboard, chalk



Ask the children to look at shape **a**.

Ask,

"How many right angles can you see in this shape?"

How can we check?"

Ask one or two children to check the angles with a folded paper right angle.

C₃

Ask the children to complete the activities in their resource book, page 58.

Unit 18. Right angles

Use a folded paper right angle to find out which of these shapes have right angles.

Example.

| shape | number of sides | number of angles | number of right angles |
|-------|-----------------|------------------|------------------------|
| a. | 5 | 5 | 3 |
| b. | | | |

Copy and complete this table.

| shape | number of sides | number of angles | number of right angles |
|-------|-----------------|------------------|------------------------|
| a. | | | |
| b. | | | |

a.

b.

c.

d.

e.

f.

g.

h.

i.

Materials:
children's resource book, page 58

?

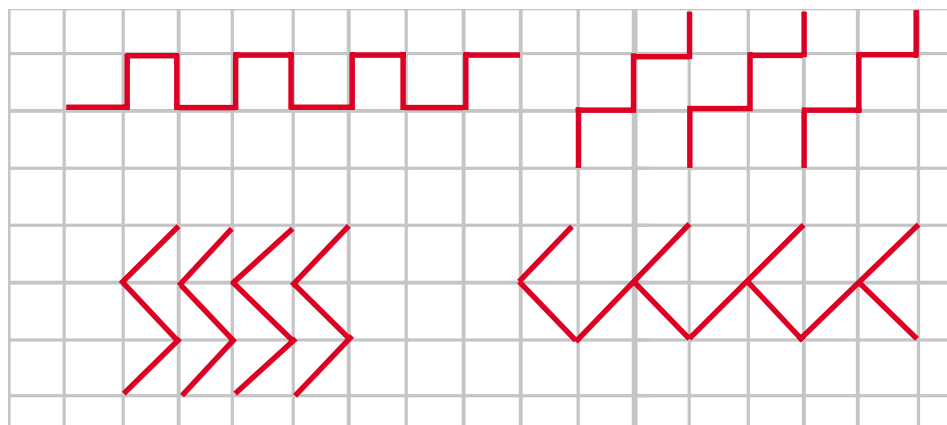
Can all the children identify shapes which have right angles?

T₄

Materials:
blackboard, ruler,
coloured chalk

Draw a grid of squares on the blackboard.

Show the children how to use the grid to draw a variety of patterns. The patterns should have right angles.
Ask the children to identify the right angles.



Ask them to check that the corners are all right angles by using their folded paper right angle from activity C₂.

C₄

Materials:
squared paper, rulers,
children's resource
book, page 15 or 33,
coloured pencils

Give the children pages of squared paper from an exercise book or ask them to copy the grid on page 15 or 33 of their resource book.

Ask them to make their own patterns using right angles.

They should check their right angles using their folded paper right angle.

Let the children colour their patterns.

Display the patterns on the classroom wall.



Can all the children make patterns with right angles?

Extra activities

Support

Gather the children together so that they can all see.

Look at each of the objects in turn.

Ask the children to identify the right angles they can see in each object.

Let the children check that the angles are true right angles using a folded paper right angle.

Materials:

mats, baskets, tapa designs, patterned cloth, empty packets from the store

Show the children a classroom clock.

Set the hands to show 3.00.

Ask,

"What angle do the hands show?"

Set the clock to different times.

Ask the children to say if the angle of the hands is a right angle, smaller than a right angle or larger than a right angle.

Let them check the angles with a folded paper right angle.

Materials:

one classroom clock

Extra activities

Extension

Write some capital letters on the blackboard.

Ask the children to identify the letters which have right angles.

Let them use a folded paper right angle to check.

Ask the children to write all the capital letters of the alphabet.

Ask them to group the letters into a table.

Materials:

blackboard, children's exercise books

| Letters with right angles | Letters without right angles |
|---------------------------|------------------------------|
| B E
F | A C
D |

Extra activities**Support**

Let the children work in twos.

Give them a balance and some measuring jugs.

Give them a collection of different familiar store items and ask them to measure the weight or capacity of each item.

Help the children with their measuring.

Ask them to record the weights and capacities in a table in their exercise books.

Materials:

a good balance, some 100 gram weights, a 100 millilitre measuring jug, a collection of store items of different weights and capacities

Extra activities**Extension**

Let the children work in twos.

Give them a balance and some measuring jugs.

Give them a collection of different objects and ask them to measure the weight or capacity of each object.

Ask them to estimate the weight to the nearest 50 grams. For example, 250 grams.

Ask them to estimate the capacity to the nearest 50 millilitres. For example, 250 millilitres.

Ask them to record the weights and capacities in a table in their exercise books.

Materials:

a good balance, some 100 gram weights, a 100 millilitre measuring jug, a collection of store items of different weights and capacities

T₃

Materials:

a 100 millilitre bottle,
a plastic curry or
Schweppes bottle, a
collection of clean,
empty containers such
as tins, jars, cups,
bowls, plastic
containers, etc,
clean, fresh, water

Use a known 100 ml container, such as a sauce bottle.
Fill it with exactly 100 ml of water.
Pour the 100 ml of water into a plastic curry bottle or
Schweppes bottle to make a standard 100 millilitre measuring
jug.
Cut the top from the plastic bottle to make it easier to pour.

Measure the capacity of a container, such as a cup.
First, ask the children to guess the capacity of the cup.
Write their guesses on the blackboard.

Ask one or two children to use the 100 millilitre measuring jug to
fill the cup, counting the number of millilitres used.

Write the true capacity of the cup on the blackboard.

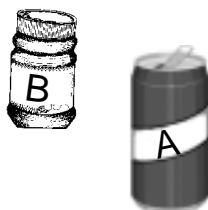
The capacity of the cup is about 400 millilitres.

Repeat with each of the other containers.

C₃

Materials:

some 100 millilitre
measuring jugs, a
collection of clean,
empty containers,
marked A to G



The children work in groups of two or three.
First they guess the capacity of each container and write their
guess on a table in their exercise book.

They measure the capacity of the containers using a 100 millilitre
jug to find the true capacity.

| container | my guess | my measurement |
|-----------|-----------------|-----------------|
| A | 300 millilitres | 300 millilitres |
| B | 100 millilitres | 200 millilitres |

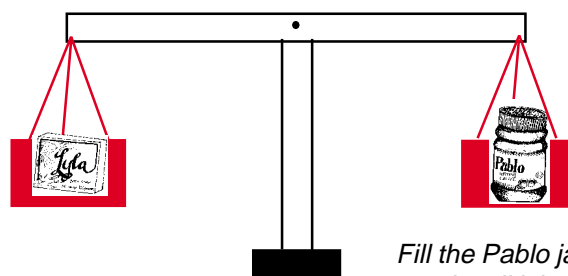


Can all the children use standard units of capacity?

T₂

Make a good balance scale.

Make some 100 gram weights by filling Pablo coffee jars or other suitable containers with the correct amount of sand. To find the correct amount of sand, balance the jars against a known weight, such as a 100 gram Lyla soap.



Fill the Pablo jar with sand until it balances the 100 gram soap.

Pick one object to weigh, such as a stapler.

Ask the children to guess the weight.

Write their guesses on the blackboard.

Ask one or two children to weigh the stapler on the scales by balancing it against some 100 gram weights. Show them how to add and take off 100 gram weights until they find the closest match to the stapler.

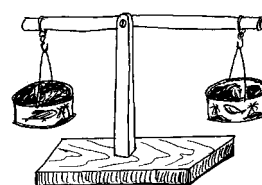
Write the true weight of the stapler on the blackboard.

The stapler weighs about 300 grams.

Repeat with each of the other objects.

Materials:

a good balance, some 100 gram weights, a collection of objects of different weights from about 100 - 1000 grams, such as shells, stones, seeds, packets of sand, pencil cases, books, staplers, etc



100 grams

C₂

The children work in groups of two or three.

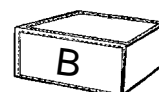
First they guess the weight of each box or packet and write their guess on a table in their exercise book.

They balance each of the packets against 100 gram weights to find the true weight.

| packet | my guess | my measurement |
|--------|-----------|-----------------|
| A | 200 grams | about 300 grams |
| B | 500 grams | about 500 grams |

Materials:

a good balance, some 100 gram weights, a collection of small boxes filled with sand with weights of 100, 200, 300, 400, 500, 600 & 700 grams, marked A to G



Can all the children use standard units of weight?

T₁

Materials:
none

Begin the activity with some stories, such as,
"Emily and Peter went to the store to buy some things for their mother.

When they got to the store they asked for 500 millilitres of kerosene for their lamp.

Next they asked for five kilograms of rice and one kilogram of flour.

They also bought two Schweppes drinks and a tin of Milo."

Ask questions about the story, such as,

"How much kerosene did they buy?

How do you think the storekeeper measured the kerosene?

How much rice did they buy?

How much flour?

How do you think the storekeeper measured the flour?

How much was in each Schweppes bottle?

What was the weight of the Milo?"

Talk about the things which are measured by weight and by capacity in the local environment.

C₁

Materials:
children's exercise
books

Ask the children to think of all the things that they might see in the store, at the wharf, at the market and at the petrol depot.

Ask the children to copy the table below.

Ask them to complete the table by writing all the things that are measured by weight and all the things that are measured by capacity.

| <i>Things measured by weight</i> | <i>Things measured by capacity</i> |
|--|---|
| fish
rice
flour
copra
freight on a plane | kerosene
petrol
Coke
Schweppes |



Can all the children recognise the difference between weight and capacity?

T₁

Let the children sit together at the front of the classroom or in the reading corner so that they can all see.

Display the collection of items for the children to see.

Hold up one item in turn.

Ask the children to guess the weight or capacity of each item.

Help the children understand that weight and capacity are different.

Complete this table on the blackboard.

| Item | weight | capacity |
|------------------|------------|----------|
| bag of rice | 1000 grams | |
| oil bottle | | 500 ml |
| packet of tea | 50 grams | |
| Schweppes bottle | | 250 ml |

Materials:

a collection of familiar store items to demonstrate weight and capacity


C₁

The children complete the activities in their resource book, page 59.


This is a practical unit so the children must see and investigate actual examples of the items in the pictures.


Unit 19. Measurement


Talk about the pictures and sentences below. Check if the sentences are true or false by investigating the real objects.


Example. 1.  The capacity is 300 ml
1. False. The weight is 100 grams


Write true or false for each picture.


1.  The capacity is 300 ml


2.  The weight is 200 grams


3.  The capacity is 500 ml


4.  The weight is 85 grams


5.  The capacity is 150 ml

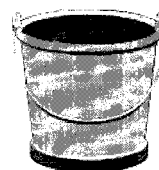
6.  The weight is 200 grams


7.  The capacity is 350 ml

8.  The weight is 400 grams

9.  The weight is 180 grams

10.  The capacity is 900 ml

11.  The capacity is 20 litres

12.  The weight is 1000 grams

Materials:

a collection of familiar store items to demonstrate weight and capacity, children's resource book, page 59

T₁

Materials:
a collection of
clean, empty plastic
bottles, tins, cups
and plastic
containers of
different sizes up to
one litre

Show children the collection of empty bottles and other containers.

Ask the children to arrange them in order of capacity, smallest first.

*Ask, "Which holds least?
Which holds most?
Which two hold about the same?
Which holds less than half a litre?"*

Show children an empty plastic Schweppes bottle. Ask the children to read the label to find the capacity of the bottle. The capacity is marked **ml**. Explain that **ml** is short for millilitre and that there are 1000 millilitres in one litre.

Now ask the children to check their ordering of the tins, bottles and containers by looking at the labels.

C₁

Materials:
a collection of
clean, empty plastic
bottles, tins, cups
and plastic
containers of
different sizes up to
one litre,
clean, fresh water

Divide the class up into small groups of four, with two boys and two girls in each group. Put the group names up on a chart so that the children can remember what group they are in.

When the class are busy with another activity, such as writing or drawing, select one group to do this practical mathematics activity.

Prepare one plastic curry bottle with a line marked at approximately 100 ml. You could use any other suitable plastic bottle or container.

Ask the children to guess the capacity in millilitres of all the other containers and write their guess on a table.

Ask them to use the 100 ml container to find the approximate capacity of all the other containers and write their answers on the table.

| container | my guess | my measurement |
|------------|----------|----------------|
| Taiyo tin | 300 ml | 200 ml |
| oil bottle | 500 ml | 500 ml |



Divide the class up into small groups of four, with two boys and two girls in each group. Put the group names up on a chart so that the children can remember what group they are in.

When the class are busy with another activity, such as writing or drawing, select one group to do this practical mathematics activity.

Give the group a collection of store items of different weights. Ask the children to put the items in order of weight by using the balance to compare them.

Ask the children to complete a table of their results.

Next ask the children to use the weights marked on the packets to put the items in order. Let them check that their weighing was correct.

Materials:

a collection of new, unopened cans and packets from the store, such as different sized Taiyo tins, a bag of salt, a packet of tea, a packet of biscuits, etc. or clean empty cans and packets filled with the same weight of sand, a balance

| | | |
|----------|--------------------|-----------|
| lightest | hard navy biscuits | 40 grams |
| | tea | 100 grams |
| | soap | 150 grams |
| | small Taiyo | 250 grams |
| | large Taiyo | 475 grams |
| heaviest | bag of sugar | 500 grams |

Measurement Topic 24: Weight and Capacity

Aim:

to teach the children the difference between weight and capacity and to give the children practice in the use of standard units of weight and capacity

Sequence of objectives:

1. to teach the difference between weight and capacity
2. to give children experience of using standard units of weight
3. to give children experience of using standard units of capacity.

This topic should be approached through practical activities by the children. Teachers should provide enough materials and opportunities so that children can practise using the standard units of capacity and weight.

Small group work is best to encourage participation and talking.

Small groups are easier to manage and make better use of limited resources.

The children should be asked to bring in clean, empty containers.

Standard measures of 100 grams and 100 millilitres can easily be made by using a known weight or capacity, such as a 100 gram soap bar or noodle packet and a 100 millilitre bottle of sauce.

T₁

Materials:

a collection of new, un-opened cans and packets from the store, such as different sized Taiyo tins, a bag of salt, a packet of tea, a packet of biscuits, etc. or clean empty cans and packets filled with the same weight of sand

Bring a collection of different un-opened store items.

If you can't get un-opened items you could use clean, empty cans and packets which have been filled with sand to their original weight.

Display the items in front of the class. Let the children pick up the items and hold them.

Talk about the different weights of the objects.

Ask the children to compare the items using sentences such as, **"The large tin of Taiyo is heavier than the small one,"** etc.

Ask children to suggest ways to find out the weights of the items. Encourage everyone to give their suggestions, such as, by using a scale, using a balance or reading the labels.

Let the children study the labels to discover for themselves that the weights are measured in grams and kilograms.

Graphs Topic 19: Making graphs

Aim:

to collect and record information using tally charts and bar charts

Sequence of objectives:

1. to teach the children to record information using tally charts
2. to teach the children to draw bar charts to show information.

This unit will give children a chance to collect and record information in tally charts and make bar graphs to show the information.

The unit involves practical activities which are relevant to the children, such as collecting information on a tally chart about the children's favourite food, games and environment.

The information is then presented in bar graphs.

T₁






Materials:
blackboard

Conduct a survey to find the children's favourite fruit.

Ask the children one by one, to say which fruit they like best.

Record the information on a tally chart on the blackboard.
Explain that tally charts are easy ways to collect and record survey information.

Tally chart to show Class
Three's favourite fruits

| | |
|---------|---|
| banana |  |
| coconut |  |
| mango |  |
| orange |  |
| guava |  |

Make one stroke on the tally chart
beside the favourite fruit of each child.

The strokes should be grouped in sets
of five, that is, four vertical lines joined
with a diagonal line.



Discuss the tally chart. Ask,

*"How many people like mango?
How many like banana?
Which fruit is the favourite?
Which is the least favourite?"*



Ask the children to conduct their own class surveys and record their information on a tally chart.

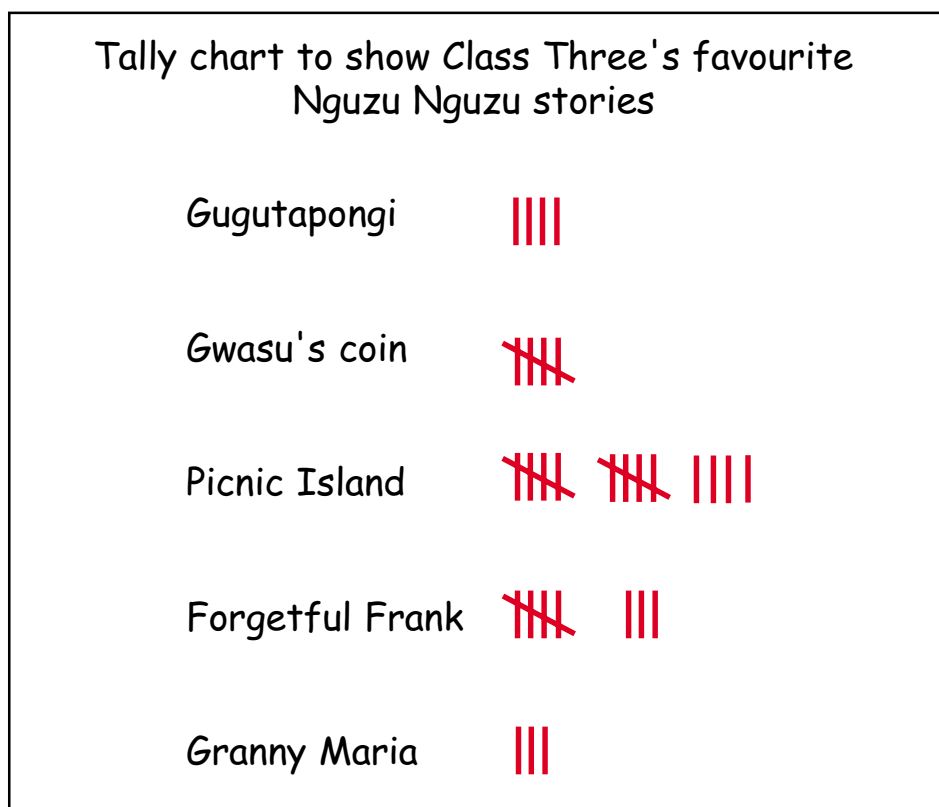
The children could work individually or in small groups.

They could collect information about favourite foods, favourite colours or favourite Nguzu Nguzu stories.

Let the children ask questions of everyone in the class and record the information using tally strokes in groups of five.

Ask questions about the children's surveys.

Materials:
children's exercise books



T₁

Materials:
blackboard

Let the children work in mixed groups of three or four.

Ask the children to conduct a village survey.

The survey can be about the different types of trees which grow in the village or the different types of crops which are grown in the gardens.

On the blackboard, show the children how to prepare a tally sheet for their survey.

If they are going to conduct the survey in the village they must be told exactly where they are allowed to go and they must be properly supervised.

Ask for some parents or members of the school committee to help supervise the children.

C₁

Materials:
children's exercise
books, paper,
coloured pencils or
crayons

The children conduct their village survey and record the information on a tally chart in their exercise books.

Talk about the tally charts. Ask questions such as,

"What is the most common tree in the village?"

What is the least common tree?

What is the most common food crop?"

Ask each group to carefully copy their tally chart onto paper.

Ask them to draw maps and pictures to illustrate their survey.

Make a display of the children's work on the classroom wall.

Village survey by Class Three

Fruit trees in the village

| | |
|---------|--|
| coconut | |
| lime | |
| guava | |
| orange | |

Coconut trees in the village



Can all the children record information on a tally chart?

T₂

Let the children sit together at the front of the classroom so that they can all see.

Use the tally chart about the children's favourite fruit.

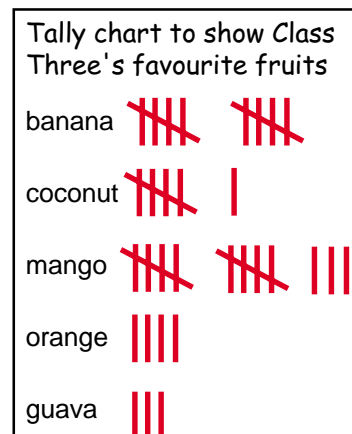
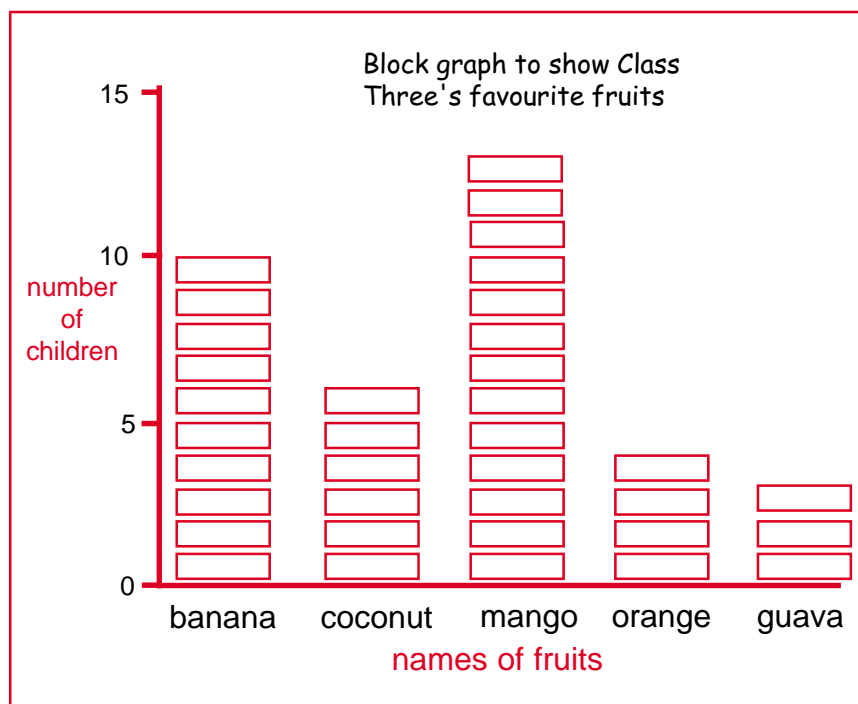
Draw a block graph to show the information from the tally chart. Show how the names of the fruits are written along the bottom of the graph.

Show how the number of children is written up the side.

Paste one paper rectangle for each child.

Ask questions about the graph.

Materials:
chart paper, paper rectangles, glue, pencil, ruler



C₂

The children work in small groups of two or three.

Help each group to make a block graph from a tally chart they have made, such as the tally chart about their favourite Nguzu Nguzu story books or their favourite colours.

They paste the paper rectangles onto their graph. Each rectangle represents one child.

Display the graphs on the wall.

Materials:
chart paper, paper rectangles, glue, rulers

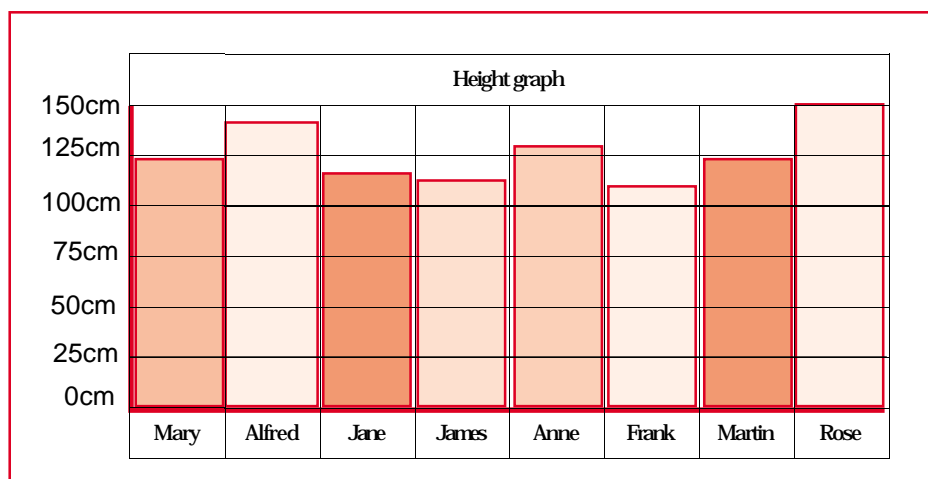
T₂

Materials:
measuring strip,
blackboard, ruler,
coloured chalk

Prepare a measuring strip from paper. Mark it in centimetres.
Fix the strip to the wall.
Measure the heights of six children in centimetres. Record the measurements on the blackboard.

Now make a bar graph to show the information.
Write the children's names along the bottom of the graph and mark off the side of the graph in centimetre intervals.

Draw a bar for each child's height.
Colour each bar.
Ask questions about the graph.

C₂

Materials:
measuring strip,
squared paper, rulers



In groups of four or five, the children measure their heights.

Each child should then make their own bar graph to show the heights of the children in their group.

They should make their bar graph on squared paper.



Can all the children draw a bar graph?

Extra activities

Support

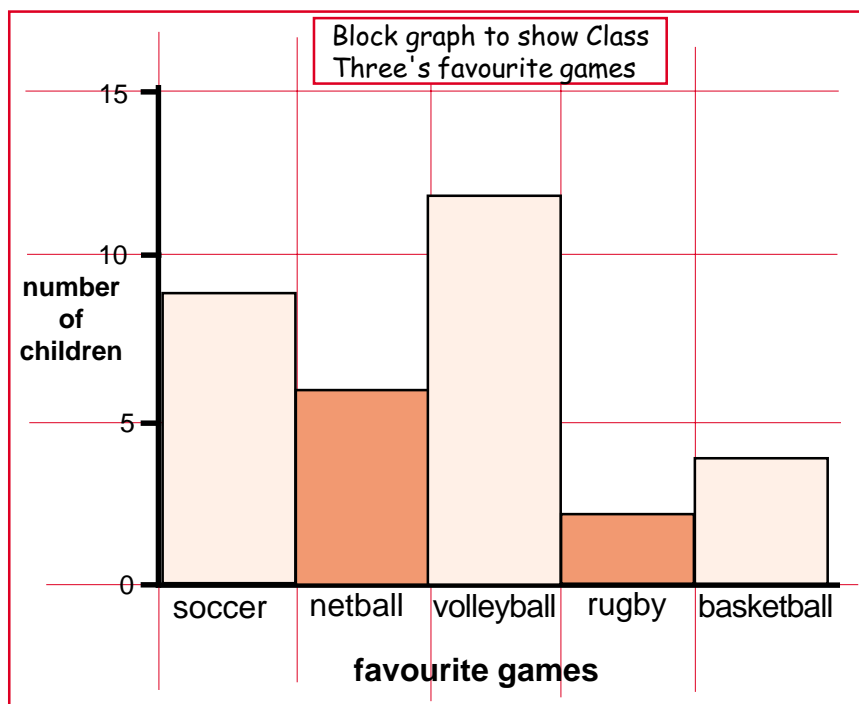
Ask the children to do a group survey to find out about the other children's favourite games.

Ask them to collect the information on a tally chart.

Next ask the children to make a bar graph to show the information.

Materials:

paper, squared paper, rulers, coloured pencils



Tally chart to show Class Three's favourite games

| | | |
|------------|--|--|
| soccer | | |
| netball | | |
| volleyball | | |
| rugby | | |
| basketball | | |

Extra activities

Extension

A National Census will be carried out in 1999 - 2000.

Teacher's Guides will be available.

Teach the children about the census and follow some of the activities from the Teacher's Guide.

Materials:

National Census Teacher's Guide, squared paper, coloured pencils

For example, you could ask the children to conduct their own census to find out how many brothers and sisters each child in the class has. They could record the information on a tally chart and then draw a block graph.

Tally chart to show Class Three's brothers and sisters

| | | |
|-----------------------|--|--|
| 1 brother or sister | | |
| 2 brothers or sisters | | |
| 3 brothers or sisters | | |
| 4 brothers or sisters | | |
| 5 brothers or sisters | | |



Nguzu Nguzu Mathematics

Standard Three