Ballycanew National School

Maths

School Plan

INTRODUCTORY STATEMENT

This plan was drawn up by the teaching staff of Ballycanew National School, over a period of professional development meetings to review the existing plan for Mathematics, June 2006

RATIONALE

It was decided to focus on Mathematics in order to formally revise our programme of teaching Mathematics within the school

Introductory Statement and Rational~

(a) Introductory Statement: On the in-school planning day on the 5th May 2002 the existing plan for Maths was reviewed and changes necessary to implement the Maths curriculum were identified. These changes were action planned in classes during the first two terms of the school year 2002 - '03. Following feedback at the February 2003 staff meeting the following plan was drawn up. All teachers were involved in this process.

b) Rationale: This plan is a record of whole school decisions to Maths in line with the Primary Curriculum, 1999. It is intended to guide teachers in their individual planning for Maths.

VISION

Our school cherishes all pupils equally. We endeavour to provide the child with the necessary skills to live a full life as a child and later as an adult.

Vision and Aims

(a) Vision: This plan will focus on meeting the needs of our children in the area of Maths. Parental involvement will be encouraged as much as possible to support their child's learning in Maths.

AIMS

(b) Aims: We endorse the aims of the Primary Curriculum for Maths as set out on page 12 of the Curriculum.

To develop a positive attitude to Mathematics.

To develop an appreciation of number in our everyday lives.
To enable the child, to acquire proficiency in fundamental mathematical skills.
To develop problem solving skills.
To enable each child to use mathematical language effectively and accurately.
To enable each child to use mathematical concepts and processes at his/her appropriate level of development and ability.
To develop an understanding of how to apply mathematical skills to everyday life.

CONTENT OF PLAN

Curriculum Planning

1. **Approaches and Methodologies:**
   The following approaches and methodologies will be used throughout the year:

- **The use of Manipulatives**: Children will have access to and use a broad range of mathematical equipment during lessons. Each class is given a resources box with a list of the items supplied. (See Resources Section of this plan)

- **Talk and Discussion**: Talk and discussion is seen as an integral part of the learning process and opportunities should be provided during the Maths class for children to discuss problems with the teacher, other individual children and in groups.

- **Active Learning/Guided Discovery**: As part of the Maths programme for each class children are provided with structured opportunities to engage in exploratory activities under the guidance of the teacher to construct meaning, to develop mathematical strategies for solving problems and to develop self motivation in mathematical activities. These activities should be outlined in the teachers' long and short-term planning.

- **Using the environment/community as a learning resource**: The school building is used as a resource to support the Maths programme. Numbers are painted on doors, measurements are marked on the floor in the hall and various heights are painted on the wall outside the office. Over the next school year, class teachers will identify aspects of the environment that could act as a setting for mathematical trails, problem solving, measurement, and shape and space activities. At the end of the year, these will be compiled into a folder of activities suitable for each class-level. They will draw from the following sources:
    - Classroom
    - General school building
    - School grounds
    - Local area

- Home

The following number limits for each class will be adhered to:

Class	Numerals
Junior Infants	0-5
Senior Infants	6-10
1st Class	to 99
2nd Class	to 199
3rd Class	to 999
4th Class	to 9999
5th Class	
6th Class	

Data

Children are encouraged to collect real data. By doing so they are made aware of the importance of entering relevant data and asking clear questions to extract the required information from the data.

Language: Concepts/Skills

There is a strong link between language and concept acquisition. We feel it is important to have a common approach to the terms used and the correct use of symbol names. Our school has agreed the following:

Vocabu1ary

Addition and Equivalence

"+" and "=" are introduced as symbols in Senior Infants.

Prior to this, (i.e. Junior Infants) the vocabulary used to talk about the operations will be

- +: "plus", "and" , "add", "more", " altogether".
- =: "the same ~

From First Class children will become familiar with the following:

- +: "addition", "total", "sum of", "increase", "more than".
- =: "equals"

Subtraction

- is introduced as a symbol in First Class.

In the infant classes the vocabulary used will be:

- "take away", "less than", "left"

From Second Class children will become familiar with:

"subtraction", "decrease", "subtract", "take away", "from", "less than", "minus", "difference".

Multiplication and Division

"+" and "x" are introduced ***as*** symbols in Third Class. The following vocabulary will be used:

-- "division", "divide", divided by", "split", "share", " shared between", "group", "how many.... in……
x "multiplication", "multiply", "times", "of".

In Fifth and Sixth Class the words "product" and "quotient" will be included.

Place Value
In place value, the word "units" will be used rather than "ones".

Written Methods
To ensure a common approach to the teaching of subtraction and following:

Subtraction
Vertical: Start from the top using the words "take away"
Horizontal: Read from left to right using the words "take away"
Renaming/regrouping will be the method used throughout the school

Fractions
In the addition and subtraction of mixed numbers, the whole numbers are worked on first, then equivalence is used for the fraction part by finding the common denominator. .

5¼ +3½=8¼+2/4

In multiplication and division improper fractions are used

3½ x 2 2/3 =-7/2 x 8/3

Children are afforded opportunities to verbalise and to use manipulatives to represent each of these activities before written recording of symbols.

Tables
Number facts up to ten will be memorised. Addition facts will be memorised by the end of Second
Class and multiplication facts by the end of Fourth Class. Both will be revised up to the end of Sixth Class.

A variety of methods will be used including counting in 2s, 3s, 4s….. reciting, using music tapes, games etc.
Subtraction and division tables will be learnt as the inverse of addition and multiplication.

Problem Solving
Children are encouraged to use their own ideas as a context for problem solving.

With regard to problem-solving children will be taught to apply the following strategies:

Understanding the problem

- Read the problem
- Read it again
- Say, in your own words, what you are trying to find out
- Find the important information
- Look for key phrases
- Write what you know.

Solving the problem

- Look for a pattern
- Guess and check
- Write an equation
- Break the problem down

Additional Help

- Construct a mode
- Draw a picture
- Make an organised list or table
- Use object to act out the problem
- Use easier numbers
- Work backwards.
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Answering the problem

- Use all the important information
- Check your work
- Decide if the answer makes sense
- Write the answer in a complete sentence.

2. **Assessment and Record Keeping**

Assessment is used by teachers to inform their planning, selection and management of learning activities so that they can make the best possible provision for meeting the varied mathematical needs of the children in our school.

Teachers select from the following range of assessment approaches:

- Teacher observation of knowledge, skills development and participation in activities
- Teacher designed tests and tasks
- Work-samples, portfolios and projects
- children will be encouraged to assess their own work on a continuous basis.

Teacher Observation

The curriculum makes reference to the validity of teacher observation as a means of building a broad understanding of a child's strengths. Teachers will note anything that they feel is important in relation to a child's progress in Maths.

Observations may include the following:

- The level of engagement in or attention to activities
- Strengths and concerns in relation to written work
- Involvement in discussions
- The response to and initiation of questioning during class or group work

Teacher designed tests and tasks

The following are used throughout the school inform the class teacher of each child's progress in Maths:

- Oral tests (tables, continuation of number patterns….)
- Written tests of numerical competence
- Problem-solving exercises that use a variety of mathematical skills
- Projects that require compilation of data or the drawing of a diagram

Standardised Testing

Criterion referenced standardised tests are used as follows:

- Assessment Tests from the Maths scheme are used throughout the school
- Test results are kept by the class-teacher and passed on to the next teacher.

The following procedure is used for norm-referenced standardised tests:

- Children are formally assessed by means of the Sigma-T tests.
- All children will be tested in the final term each year.
- The results of each child's tests and their test papers will be kept in their school file to be stored in the school office
- Sigma-T results are used to inform pupil's reports
- In line with the school's policy on record keeping school files are kept until the child reaches the age of 21.

3. Children with Different Needs

The Maths programme aims to meet the needs of all children in the school. This will be achieved by teachers varying the pace, content and methodologies to ensure learning for all children. Evidence of this differentiated approach will be recorded in teachers' Sceim Bliana.

Those children who receive scores at or below the 10th percentile on the standardised tests will have priority in attending the Learning Support Teacher for supplementary teaching for Maths. The availability of supplementary Leaching for Maths, however, depends on the caseload of the Learning Support Teacher. Arrangements will be in accordance with the recommended selection criteria as
Outlined in the school's Special Needs Policy

Diagnostic tests may also be administered where the need arises. Parental permission must be obtained before these tests are administered.

If there are children who qualify for supplementary teaching but for whom there is no possibility of receiving formal supplementary teaching the following will happen:

- The Learning Support teachers will liaise with the class teacher on resource books and materials that could be used by the class teacher and the child in the mainstream class set
- If the child is already attending the Learning Support Teacher for English it may be possible, on occasion, for the child to receive some help with his/her Maths work as part of the supplementary teaching sessions.

The progress of such children will be reviewed on a regular basis.

The same provision will apply for children who do not q~i1~r supplementary teaching but yet demonstrate difficulty with Mathematical activities on an on-going basis or with particular concepts.

The requirements of children with special needs will be taken into consideration when planning class lessons and field trips. The SNA supports particular children or groups as directed by the class teacher. Grants as appropriate will be access to support the needs of individual children. Additional materials and resources may also be purchased by the school.
For children of exception ability, opportunities will be will be provided to work on independent research projects, ICT and with children who have a similar interest in Maths activities. Parents will be consulted and opportunities for further development will be explored i.e. contact with An O'ige Thréitheach, Centre for Talented Youth Teachers should keep a record of the differentiated approach adopted for these children.

5. Equality of Participation and Access

All children are provided with equal access to all aspects of the Maths curriculum. Boys and girls are provided with equal opportunities to engage in mathematical activities.

Organisational planning

6. Timetable

The following time is allocated for Mathematics in this school:

- Infants Classes: 2hours, l5minutes.

- First Class - Sixth Class: 3hours.

Timetables must record this time allocation for Maths.

There is discretionary time available each week that teachers can occasionally use to support the Mathematics curriculum.

Infants: 1 hour.
First-Sixth Class: 2 hours.

7. Homework

In this school Homework should be line with the approaches as set out in the curriculum for Maths

ICT

Software used must include a variety of activities to develop the children's conceptual knowledge and problem-solving skills in addition to drill and practice activities. Computer software programmes are available from the office. A list of these programmes is posted on the wall in the staff room. Programmes should be signed for and returned as soon as a teacher is finished with them.

Textbooks/workbooks

- Textbooks are selected in line with the objectives of the curriculum.
- The scheme currently in use throughout the school is ... . . This scheme is in line - with the methodologies and language agreed by the staff in the core areas listed in this plan and are in line with the requirements of the Curriculum
- This scheme is used in all classes from Junior Infants to 6th class as the basic text.

- A table book, ….. will he used throughout the school.
- Where a teacher deems necessary supplementary material will be designed/supplied.

9. Teachers Planning and Reporting

Teachers should base their yearly and short term plans on the approaches set out in this whole school plan for Maths. Work covered will be outlined in the Cuntas Míosúil which will be submitted to the principal. Cuntas Míosúil will be used to review the school's programme for Maths in June.

10. Staff

Teachers are made aware of any opportunities for further professional development through participation courses available in Education Centres or other venues. Skills and expertise within the school are shared and developed through inputs at staff meetings.

11. Parental Involvement

parents are encouraged to support the school's programme for Maths. Teachers will explain elements of maths programmes at the request of parents. Particular attention will be drawn to:

- The importance of trial and error, estimation, the use of concrete materials and the role of calculators
- The school's approach to e.g. subtraction, division, calculations using fractions
- The fact that Maths homework may be based on practical activities
- Communication between teacher and parents will be maintain to back progress in Mathematics and other issues.

Individual parent/teacher meetings are held annually in November. Teachers and parents are afforded this chance to discuss each individual child's progress in maths and other areas, and ways of assisting that progress. Parents and teachers are welcome to make individual arrangements to discuss matters of relevance at other times throughout the school year.

Parents with particular expertise may be invited to address classes. Parents are invited to accompany field outings. -

12. Community Links

Members of the local community may be invited to assist the school's Maths programme. Proposed invitations must be discussed in advance.

- **Success Criteria**

The success of this plan will be measured using the following criteria:

- Implementation of revisions in the Maths curriculum will be evident in teachers work
- Continuity of content and methodology will be evident in teachers' preparation and monthly reports
- On going assessment, formal and informal, will show that pupils acquiring an understanding of mathematical concepts and a proficiency in maths skills appropriate to their age and ability.

- **Implementation**

1. **Roles and Responsibilities**: Class teachers are responsible for implementation of the Maths programme for their own classes.

2. **Timeframe**: School years 2006-2007

- **Review**

Progress made during this school year will be reviewed at the June 2OO7 staff meeting and will be based on results of assessments across all classes and on teachers' views as to the effectiveness of the plan.

- **Ratificatition and Communication**

This plan was ratified by Board of Management
The plan was communicated to teachers and implemented in classes from September 2007

SKILLS DEVELOPMENT

1. **Application and Problem - Solving**

Select appropriate materials and processes for mathematical tasks and applications.
Apply concepts and processes in a variety of contexts.
Select and apply appropriate strategies for task completion or problem – solving
Analyse problems and plan an approach to solving them
Recognise solutions
Evaluate solutions to problems

2. **Communicating and Expressing**

Listen to and discuss classmates mathematical descriptions and explanations.
Discuss and explain mathematical activities, their processes and results either verbally, pictorially, in a diagram, symbolically etc
Discuss problems and carry out analyses of same

3. **Integrating and Connecting**

Connect informally acquired mathematical ideas and processes with formal ones.
Recognise mathematics in the environment
Represent mathematical ideas and processes in different ways – be it verbal, pictorial, diagrammatic or symbolic
Understand the connection between mathematical procedures and concepts used
Recognise and apply mathematical ideas and processes in other areas of the curriculum

4. **Reasoning**

Classify objects into logical categories
Make deductions and carry out experiments to test them
Recognise and create mathematical patterns and relationships
Justify the process of mathematical activities, problems and projects and their results

5. **Implementing**

Devise and use metal strategies and procedures for carrying out mathematical tasks
Use appropriate manipulatives to carry out mathematical tasks and procedures.
Execute procedures efficiently and with a variety of tools.

6. **Understanding and Recalling**

Recall and understand terminology, facts, definitions and formulae.

7. **Estimation**

Estimation will form part of every Maths Lesson. Children will be encouraged to use each of the following strategies selecting the most appropriate for the task in hand:

- Front end
- Clustering
- Rounding
- Special numbers

These strategies are explained on pages 32-34 of the Teacher Guidelines for Mathematics

8. **Skills**

Every strand studied must provide opportunities for acquiring these skills. Opportunities should also be provided for the transfer of these skills to other areas e.g. Science, Geography, Music. Evidence of skills development should be included in teachers' individual planning.

		Junior Infants	
Strands	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
Early Mathematical Activities	Classifying	• Classify objects on the basis of one attribute, such as colour, shape, texture or size. • Identify the complement of a set.	Page 20
	Matching	• Match equivalent and non-equivalent sets using one-to-one correspondence.	Page 20
	Comparing	• Compare objects according to length, width, height, weight, quantity, thickness or size. • Compare sets without counting.	Page 21
	Ordering	• Order objects according to length or height. • Order sets without counting.	Page 21
Number	Counting	• Count numbers of objects in a set 1-10.	Page 22
	Comparing and ordering	• Compare equivalent and non-equivalent sets 1-5 by matching without using symbols. • Order sets of objects by number 1-5. • Use the language of ordinal number: first, last.	Page 22
	Analysis of number (Combining, Partitioning and Numeration)	• Explore the components of number 1-5. • Combine sets of objects, totals 5. • Partition sets of objects 1-5. • Develop an understanding of the conservation of number 1-5. • Read, write and order numerals 1-5. • Identify the empty set and the numeral zero. • Tell at a glance the number of objects in a set, 1-5 • Solve simple oral problems, 0-5.	Page 23-25
Algebra	Extending Patterns (Integration)	• Identify, copy and extend patterns in colour, shape and size.	Page 26

		Junior Infants	
Strands	**Strand Units**	**Content/Learning Objectives**	**Curriculum**
Shape and Space	Spatial Awareness	• Explore, discuss, develop and use vocabulary of spatial relations.	Page 28
	3-D shapes	• Sort 3-D shapes, regular and irregular. • Solve tasks and problems involving shape.	Page 28
	2-D shapes (Integration)	• Sort and name 2-D shapes: square, circle, triangle, rectangle. • Use suitable structured materials to create pictures. • Solve problems involving shape.	Page 29
Measures	Length (Integration)	• Develop and understanding of the concept of length through exploration, discussion and use of appropriate vocabulary. • Compare and order objects according to length or height.	Page 30
	Weight (Integration)	• Develop and understanding of the concept of weight through exploration, handling of objects, and the use of appropriate vocabulary. • Compare objects according to weight.	Page 31
	Capacity	• Develop and understanding of the concept of capacity through exploration and the use of appropriate vocabulary. • Compare containers according to capacity.	Page 32
	Time (Integration)	• Develop and understanding of the concept of time through the use of appropriate vocabulary. • Sequence daily events or stages in a story.	Page 33
	Money	• Recognize and use coins (up to 5 cents). • Solve practical tasks and problems using money.	Page 34
Data	Recognising and interpreting data	• Sort and classify sets of objects by one criterion • Match sets, equal and unequal • Represent and interpret a set of simple mathematical data using real objects and pictures	Page 35

Senior Infants

Strands	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
Early Mathematical Activity (Revision)	Classifying, Matching (Revision)	• Classify objects on the basis on one attribute. • Identify the complement of a set. • Match equivalent and non-equivalent sets.	(Revision)
Number	Counting	• Count the number of objects in a set, • 0-20.	Page 22
	Comparing and ordering	• Compare equivalent and non-equivalent sets 0-10 by matching. • Order sets of objects by number 0-10. • Use the language of ordinal number: first, second, third, last.	Page 22
	Analysis of number (Combining, Partitioning and Numeration)	• Explore the components of number 1-50. • Combine sets of objects, totals to 10. • Partition sets of objects, 0-10. • Use the symbols + and – to construct word sentences involving addition. • Develop an understanding of the conservation of number 0-10. • Read, write and order numbers 0-10. • Identify the empty set and numeral zero. • Estimate the number of objects in a set, 2-10. • Solve simple oral and pictorial problems, 0-10.	Page 23-25
Algebra	Extending Patterns (Integration)	• Identify, copy and extend patterns in colour, shape, size and number (3-4 elements). • Discover different arrays of the same number. • Recognise patterns and predict subsequent numbers.	Page 26

		Senior Infants	
Strands	**Strand Units**	**Content/Learning Objectives**	**Curriculum**
Shape and space	Spatial Awareness	• Explore, discuss, develop and use the vocabulary of spatial relations.	Page 28
	3-D shapes	• Sort, describe and name 3-D shapes: cube, cuboid, sphere and cylinder. • Combine 3-D shapes to make other shapes. • Solve tasks and problems involving shape.	Page 29
	2-D shapes (Integration)	• Sort, describe and name 2-D shapes: square, circle, triangle, rectangle. • Combine and divide 2-D shapes to make larger or smaller shapes. • Solve problems involving shape and space. • Give simple moving and turning directions.	Page 29
Measures	Length (Integration)	• Develop and understanding of the concept of length through exploration, discussion, and use of appropriate vocabulary. • Compare and order objects according to length or height. • Estimate and measure length in non-standard units. • Select and use appropriate non-standard units to measure length, width or height. Discuss reasons for choice.	Page 30
	Weight (Integration)	• Develop and understanding of the concept of weight through exploration, handling of objects and use of appropriate vocabulary. • Compare and order objects according to weight. • Estimate and weigh in non-standard units • Select and use appropriate non-standard units to weigh objects.	Page 31
	Capacity	• Develop and understanding of the concept of capacity through exploration and the use of appropriate vocabulary • Compare and order containers according to capacity. • Estimate and measure capacity in non-standard units. • Select and use appropriate non-standard units to measure capacity.	Page 32

Strands	**Strand Units**	**Content/Learning Objectives**	**Curriculum**
	Time (Integration)	• Develop and understanding of the concept of time through the use of appropriate vocabulary. • Sequence daily and weekly events or stages in a story. • Read time in one-hour intervals.	Page 33
	Money	• Recognise coins up to 20cents and use coins up to 10 cents. • Solve practical tasks and problems using money.	Page 34
Data	Recognising and interpreting data	• Sort and classify sets of objects by one and two criteria. • Represent and interpret data in two rows or columns using real objects, models and pictures.	Page 35

First Class			
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
Number	Counting and numeration	• Count the numbers of objects in a set. • Read, write and order numerals 0-99. • Estimate the number of objects in a set 0-20.	Page 40
	Comparing and Ordering	• Compare equivalent and non-equivalent sets 0-20. • Order sets of objects by number. • Use the language of ordinal number, first to tenth.	Page 41
	Place Value (addition and subtraction)	• Explore, identify and record place value 0=99.	Page 41
	Operations	• **Addition**: Develop and understanding of addition by combining or partitioning sets, use concrete materials 0-20. • Explore, develop and apply the commutative, associative and zero properties of addition. • Develop and/or recall mental strategies for addition facts within 20. • Construct number sentences and number stories; solve problems involving addition within 20. • Add number without and with renaming within 99. • Explore and discuss repeated addition and group counting. • **Subtraction**: Develop an understanding of subtraction as deducting, as complementing and as difference 0-20. • Develop and/or recall mental strategies for subtraction 0-20. • Construct number sentences and number stories; solve problems involving subtraction. • Estimate differences within 99. • Use the symbols +,-,= . • Solve one-step problems involving addition and subtraction.	Pages 42-45

		First Class	
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
	Fractions (Linkage)	• Establish and identify half of sets to 20	Pages 45
Algebra	Extending and using patterns	• Recognise pattern, including odd and even numbers. • Explore and use patterns in addition facts. • Understand the use of a frame to show the presence of an unknown number.	Page 46
Shape and Space	Spatial awareness	• Explore, discuss, develop and use the vocabulary of spatial relations. • Give and follow simple directions within classroom and school settings.	Pages 48
	2-D shapes (Linkage, integration)	• Sort, describe, compare and name 2-D shapes: square, rectangle, triangle, circle, semicircle. • Construct and draw 2-D shapes. • Combine and partition 2-D shapes. • Identify halves of 2-D shapes.	Page 49
	3-D shapes (Linkage)	• Describe, compare and name 3-D shapes, including cube, cuboid, cylinder and sphere. • Discuss the use of 3-D shapes in the environment. • Solve and complete practical tasks and problems involving 2-D and 3-D shapes. • Explore the relationship between 2-D and 3-D shapes.	Page 50

		First Class	
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
	Symmetry		Page 51
	Angles (Integration)		Page 51
	Area (Linkage)		Page 53
	Weight	• Estimate, compare and record weight using non-standard units. • Select and use appropriate non-standard measuring units and instruments. • Estimate, measure and record weight using standard unit (the kilogram) and solve simple problems.	
	Capacity	• Estimate, compare, measure and record capacity using non-standard units. • Select and use appropriate non-standard measuring units and instruments. • Estimate, measure and record capacity using standard unit (the litre) and solve simple problems.	Page 55
	Time	• Use the vocabulary of time to sequence events. • Read and record time using simple devices. • Read time in hours and half-hours on 12-hour analogue clock. • Read day, date and month using a calendar.	Page 56
	Money Length	• Recognise, exchange and use coins up to the value of 50 cents. • Calculate how many items may be bought with a given sum. • Estimate, compare, measure and record length using non-standard units • Select and use appropriate non-standard measuring units and instruments. • Estimate, measure and record length using standard unit (the metre) • Solve and complete practical tasks and problems involving length	Page 57
Data	Representing and interpreting data (Integration).	• Sort and classify objects by two and three criteria. • Represent and interpret data in two, three or four rows or columns using real objects, models and pictures.	Page 58

		First Class	
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
Tables		• Addition (1-10) • Subtraction (1-10)	

Second Class			
Strand	Strand Unit	**Content/Activities**	**Curriculum**
Number	Counting and numeration	• Count the number of objects in a set. • Read, write and order numerals 0-199. • Estimate the number of objects in set 0-20.	Page 40
	Comparing and Ordering	• Compare equivalent and non-equivalent sets 0-20. • Use the language of ordinal number.	Page 41
	Place Value (addition and subtraction)	• Explore, identify and record place value 0-99.	Page 41
	Operations	• **Addition:** Develop an understanding of addition by combining or partitioning sets. • Explore, develop and apply commutative, associative and zero properties of addition. • Develop and recall mental strategies for addition facts within 20. • Construct number sentences and number stories; solve problems involving addition within 99. • Add numbers without and with renaming within 99. • Explore and discuss repeated addition and group counting. • **Subtraction:** Develop and understanding of subtraction as deduction, as complementing and as difference. • Develop and recall mental strategies for subtraction 0-20. • Construct number sentences involving subtraction of whole numbers; solve problems involving subtraction. • Estimate differences within 99. • Subtract numbers without and with renaming within 99. • Use the symbols +, -, =, <, >. • Solve one-step and two-step problems involving addition and subtraction.	Pages 42-45
	Fractions	• Establish and identify halves and quarters of sets of 20	
Algebra	Extending and using patterns	• Recognize patterns and predict subsequent Numbers • Explore and use patterns in addition facts • Understand the use of a frame to show the presence of an unknown number	

		Second Class	
Strand	Strand Unit	Content/Learning Objectives	**Curriculum**
Shape and space	Spatial awareness	• Explore, discuss, develop and use the vocabulary of spatial relations. • Give and follow simple directions within classroom and school settings, including turning directions using half and quarter turns	Pages 48
	2-D shapes (Linkage, integration)	• Sort, describe, compare and name 2-D shapes: square, rectangle, triangle, circle, semicircle, oval. • Construct and draw 2-D shapes. • Combine and partition 2-D shapes. • Identify half and quarter of shapes. • Identify and discuss the use of 2-D shapes in the environment.	Page 49
	3-D shapes (Linkage)	• Describe, compare and name 3-D shapes, including cube, cuboid, cylinder, sphere and cone. • Discuss the use of 3-D shapes in the environment. • Solve and complete practical tasks and problems. involving 2-D and 3-D shapes. • Explore the relationship between 2-D and 3-D shapes.	Page 50
	Symmetry	• Identify line symmetry in shapes and in the environment.	Page 51
	Angles (Integration)	• Explore and recognise angles in the environment.	Page 51
Measures	Length (Linkage)	• Estimate, compare, measure and record length using non-standard units. • Select and use appropriate non-standard measuring units/instruments. • Estimate, measure and record length using metre and centimetre. • Solve and complete practical tasks and problems involving length.	Pages 52,53

		Second Class	
Strand	Strand Unit	Content/Learning Objectives	**Curriculum**
	Area (Linkage)	• Estimate and measure area using non-standard units.	Page 53
	Capacity	• Estimate, compare, measure and record the capacity of a wide variety of containers using non-standard units. • Select and use appropriate non-standard measuring units and instruments. • Estimate, measure and record capacity using litre, half-litre and quarter-litre bottles and solve simple problems.	Page 55
	Weight	• Estimate, compare, measure and record weight using non-standard units • Select and use appropriate non-standard measuring units and instruments • Estimate, measure and record weight using kilogram and solve simple problems • Explore and discuss instances when objects or substances that weigh 1kg vary greatly in size	
	Time	• Use the vocabulary of time to sequence events. • Read and record time using simple devices. • Read time in hours, half-hours and quarter-hours on 12-hour analogue clock. • Read time in hour and half-hours on digital clock. • Read day, date and month using calendar and identify the season.	Page 56
	Money	• Recognise, exchange and use coins up to the value of 2 Euro. • Write the value of a group of coins; record money amount as cents and later as Euro.	Page 57
Data	Representing and interpreting data (Integration).	• Sort and classify objects by two and three criteria. • Represent, read and interpret simple tables and charts (pictograms). • Represent, read and interpret simple block graphs.	Page 58

Tables		• Addition (1-10) • Subtraction (1-10)	

Third Class			Tables
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
Number	Place Value	• Explore and identify place value in whole numbers 0-999. • Read, write and order three-digit numbers. • Round whole numbers to the nearest ten or hundred. • Explore and identify place value in decimal numbers to one place or decimals.	Page 64
	Operations (Addition, subtraction, multiplication and division)	• Addition and Subtraction. • Add and subtract, without and with renaming, within 999. • **Subtraction: Borrow Pay Back method to be introduced at the end of January** • Know and recall addition and subtraction facts. • Solve word problems involving addition and subtraction. • Multiplication. • Develop and understanding of multiplication as repeated addition and vice versa. • Explore, understand and apply the zero, commutative and distributive properties of multiplication. • Develop and/or recall multiplication facts within 100. • Multiply a one-digit or two-digit number 0-10. • Solve and complete practical tasks and problems involving multiplication of whole numbers. • Division. • Develop an understanding of division as sharing and as repeated subtraction, without and with remainders. • Develop and/or recall division facts within 100. • Divide a one-digit or two-digit number by a one-digit number without and with remainders. • Solve and complete practical tasks and problems involving division of whole numbers.	Pages 65-68

		Third Class	
Strand	**Strand Unit**	Content/Learning Objectives	**Curriculum**
	Fractions	• Identify fractions and equivalent forms of fractions with denominations 2, 4, 8 and 10. • Compare and order fractions with appropriate denominators and position on the number line. • Calculate a fraction of a set using concrete materials. • Develop an understanding of the relationship between fractions and division. • Calculate a unit fraction of a number and calculate a number, given a unit fraction of the number. • Solve and complete practical tasks and problems involving fractions.	Pages 68-69
Algebra	Decimals 70-71	• Identify tenths and express in decimal form. • Order decimals on the number line. • Solve problems involving decimals.	Pages 69
Shape and space	2-D shapes (Linkage and Integration)	• Identify, describe and classify 2-D shapes: square, rectangle, triangle, hexagon, circle, semicircle, oval and irregular shapes. • Explore, describe and compare the properties (sides, angles, parallel and non-parallel lines) of 2-D shapes. • Construct and draw 2-D shapes. • Combine,, tessellate and make patterns with 2-D shapes. • Identify the use of 2-D shapes in the environment. • Solve and complete practical tasks and problems involving 2-D shapes.	Page 72

		Third Class	
Strand	**Strand Unit**	Content/Learning Objectives	**Curriculum**
	3-D shapes (Integration)	• Identify, describe and classify 3-D shapes, including cube, cuboid, cylinder, cone, sphere, triangular prism, pyramid. • Explore, describe and compare the properties of 3-D shapes. • Explore and describe the relationship of 3-D shapes with constituent 2-D shapes. • Construct 3-D shapes. • Solve and complete practical tasks and problems involving 2-D and 3-D shapes.	Page 73
	Symmetry (Linkage)	• Identify line symmetry in the environment. • Identify and draw lines of symmetry in two-dimensional shapes.	Page 74
	Lines and angles (Integration)	• Identify, describe and classify vertical, horizontal and parallel lines. • Recognise and angle in terms of a rotation. • Classify angles as greater than, less than or equal to a right angle. • Solve problems involving lines and angles.	Page 75
Measures	Length (Integration)	• Estimate, compare, measure and record length of a wide variety of objects using appropriate metric units (m, cm). • Rename units of length in m and cm. • Solve and complete practical tasks and problems involving the addition and subtraction of units of length (m, cm).	Page 76
	Area (Linkage)	• Estimate, compare and measure the area of regular and irregular shapes.	Page 77

		Third Class	
Strand	**Strand Unit**	Content/Learning Objectives	**Curriculum**
	Time (Integration)	• Consolidate and develop further a sense of time passing. • Read time in five-minute intervals on analogue and digital clock (12-hour). • Record time in analogue and digital forms. • Read and interpret simple timetables. • Rename minutes as hours and hours as minutes. • Read dates from calendars and express weeks as days and vice versa. • Solve and complete practical tasks and problems involving times and dates.	Pages 79,80
	Money (Integration)	• Rename amounts of Euro or cents and record using symbols and decimal point. • Solve and complete one-step problems and tasks involving the addition and subtraction of money.	Page 81
Data	Representing and interpreting data (Linkage and Integration)	• Collect, organise and represent data using pictograms, block graphs and bar charts. • Read and interpret tables, pictograms, block graphs and bar charts. • Use data sets to solve and complete practical tasks and problems.	Page 82
	Chance (Integration)	• Use vocabulary of uncertainty and chance: possible, impossible, might, certain, not sure. • Order events in terms of likelihood of occurrence • Identify and record outcomes of simple random processes.	Page 83

Tables		• Addition • Subtraction • Multiplication • Division	

Fourth Class			
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
Number	Place Value	• Explore and identify place value in whole numbers 0-9999. • Read, write and order four-digit numbers and solve simple problems. • Round whole numbers to the nearest thousand. • Explore and identify place value in decimal numbers to two places of decimals.	Page 64
	Operations (Addition, subtraction, multiplication and division)	• Add and subtract, without and with renaming, within 9999. • Know and recall addition and subtraction facts. • Solve word problems involving addition and subtraction. • Develop and understanding of multiplication as repeated addition and vice versa. • Explore, understand and apply the zero, commutative and distributive properties of multiplication. • Develop and/or recall multiplication facts within 100. • Multiply a two-digit or three digit number by a one or two-digit number. • Use a calculator to check estimates. • Solve and complete practical tasks and problems involving multiplication of whole numbers • Develop an understanding of division as sharing and as repeated subtraction, without and with remainders. • Develop and/or recall division facts within 100. • Divide a three-digit number by a one-digit number without and with remainders. • Use a calculator to check estimates. • Solve and complete practical tasks and problems involving division of whole numbers.	Pages 65-68

Fourth Class			
Strand	**Strand Unit**	**Content/Learning Objectives**	**Curriculum**
	Fractions	• Identify fractions and equivalent forms of fractions with denominations 2, 3, 4, 5, 8, 9, 10 and 12. • Compare and order fractions with appropriate denominators and position on the number line. • Calculate a fraction of a set using concrete materials. • Calculate a number, given a multiple fraction of the number. • Express one number as a fraction of another number. • Solve and complete practical tasks and problems involving fractions.	Pages 68-69
	Decimals	• Express tenths and hundredths as fractions and decimals. • Identify place value of whole numbers and decimals to two places and write in expanded form. • Order decimals on the number line. • Add and subtract whole numbers and decimals up to two places. • Multiply and divide a decimal number up to two places by a single-digit whole number. • Solve problems involving decimals.	Pages 69
Algebra	Number patterns and sequences	• Explore, recognise and record patterns in number, 0-9999. • Explore, extend and describe sequences. • Use patterns as an aid in the memorisation of number facts.	Page 70
	Number sentences	• Translate and addition , subtraction, multiplication or division number sentence with a frame into a word problem (frame not in initial position). • Translate a one-step word problem into a number sentence. • Solve one-step number sentences.	Page 71

Fourth Class			
Strand	**Strand Unit**	Content/Learning Objectives	**Curriculum**
	2-D shapes (Linkage and Integration)	• Identify, describe and classify 2-D shapes: equilateral, isosceles and scalene triangle, parallelogram, rhombus, pentagon, octagon. • Explore, describe and compare the properties (sides , angles, parallel and non-parallel lines) of 2-D shapes. • Construct and draw 2-D shapes. • Combine, tessellate and make patterns with 2-D shapes. • Identify the use of 2-D shapes in the environment. • Solve and complete practical tasks and problems involving 2-D shapes.	Page 72
	3-D shapes (Integration)	• Identify, describe and classify 3-D shapes, including cube, cuboid, cylinder, cone, sphere, triangular prism, pyramid. • Establish and appreciate that when prisms are sliced through (in the same direction) each face is equal in shape and size. • Explore and describe the relationship of 3-D shapes with constituent 2-D shapes. • Construct 3-D shapes. • Solve and complete practical tasks and problems involving 2-D and 3-D shapes.	Page 73
	Symmetry (Linkage)	• Identify line symmetry in the environment. • Identify lines of symmetry as horizontal, vertical or diagonal. • Use understanding of line symmetry to complete missing half of a shape, picture or pattern.	Page 74
	Lines and angles (Integration)	• Identify, describe and classify oblique and perpendicular lines. • Draw, discuss and describe intersecting lines and their angles. • Classify angles as greater than, less than or equal to a right angle. • Solve problems involving lines and angles.	Page 75

Fourth Class			
Strand	**Strand Unit**	Content/Learning Objectives	**Curriculum**
	Weight	• Estimate, compare, measure and record the weight of a wide variety of objects using appropriate metric units (kg, g) and selecting suitable instruments of measurement. • Rename units of weight in kg and g. • Rename units of weight using decimal or fraction form. • Solve and complete practical tasks and problems involving the addition, subtraction, multiplication and simple division of units of weight (kg and g).	Page 77
	Capacity	• Estimate, compare, measure and record capacity using appropriate metric (l, ml) and selecting suitable instruments of measurement. • Rename units of capacity in l and ml • Rename units of capacity using decimal and fraction form. • Solve and complete practical tasks and problems involving the addition, subtraction, multiplication and simple division of units of capacity (l, ml).	Page 78
	Time (Integration)	• Consolidate and develop further a sense of time. • Read time in one-minute intervals on analogue and digital clock (12-hour). • Express digital time as analogue time and vice versa. • Read and interpret simple timetables. • Rename minutes as hours and hours as minutes. • Read dates from calendars and express weeks as days and vice versa. • Solve and complete practical tasks and problems involving times and dates and the addition and subtraction of hour and minutes.	Pages 79,80
	Money (Integration)	• Rename amounts of money as Euro or cents and record using Euro symbol and decimal point. • Solve and complete practical one-step and two-step problems and tasks involving the addition, subtraction, multiplication and simple division of money.	Page 81

Fourth Class				
Strand	**Strand Unit**	Content/Learning Objectives	**Curriculum**	Resource: Action Maths
		• Addition • Subtraction • Multiplication • Division		• 5 plus 1 equals 6 etc. • 3 5s equals 15 etc.

Fifth Class			
Strand	Strand Unit	Content/Learning Objectives	**Curriculum**
Number	Place Value	• Read, write and order whole numbers and decimals. • Identify place value in whole numbers and decimals. • Round whole numbers and round decimals.	Page 88
	Operations	• Estimate sums, differences, products and quotients of whole numbers. • Add and subtract whole numbers and decimals (to three decimal places) without and with a calculator. • Multiply a decimal (up to three places) by a whole number, without and with a calculator. • Divide a three-digit number by a two-digit number, without and with a calculator. • Divide a decimal number by a whole number, without and with a calculator.	Pages 88,89
	Fractions	• Compare and order fractions and identify equivalent forms of fractions with denominators 2-12. • Express improper fractions as mixed numbers and vice versa and position them on the number line. • Add and subtract simple fractions and simple mixed numbers. • Multiply a fraction by a whole number. • Express tenths, hundredths and thousandths in both fractional and decimal form.	Pages 89,90
	Decimals and percentages (Linkage and Integration)	• Develop and understanding of simple percentages and relate them to fractions and decimals. • Compare and order fractions and decimals. • Solve problems involving operations with whole numbers, fractions, decimals and simple percentages.	Page 91
	Number theory	• Identify simple prime and composite numbers. • Identify square and rectangular numbers. • Identify factors and multiples.	Page 92
Algebra	Directed numbers (Integration)	• Identify positive and negative numbers in context.	Page 94
	Rules and properties	• Explore and discuss simple properties and rules about brackets and priority of operation. • Identify relationships and record verbal and simple symbolic rules and number patterns.	Page 95

Fifth Class

Strand	Strand Unit	Content/Learning Objectives	Curriculum
	Equations	• Translate number sentences with a frame into word problems and vice versa. • Solve one-step number sentences and equations.	Page 97
Shape and space	2-D shapes	• Make informal deductions about 2-D shapes and their properties. • Use angle and line properties to classify and describe triangles and quadrilaterals. • Identify the properties of the circle. • Construct a circle of given radius or diameter. • Tessellate combinations of 2-D shapes. • Classify 2-D shapes according to their lines of symmetry. • Use 2-D shapes and properties to solve problems.	Pages 98,99
	3-D shapes (Integration)	• Identify and examine 3-D shapes and explore relationships, including tetrahedron (faces, edges and vertices). • Draw the nets of simple 3-D shapes and construct the shapes.	Page 99
	Lines and angles	• Recognise, classify and describe angles and relate angles to shape and the environment. • Recognise angles in terms of a rotation. • Estimate, measure and construct angles in degrees. • Explore the sum of the angles in a triangle.	Pages 100, 101
Measures	Length (Integration)	• Select and use appropriate instruments of measurement. • Estimate and measure length using appropriate metric units. • Estimate and measure the perimeter of regular and irregular shapes.	Page 102
	Area	• Discover that the area of a rectangle is length by breadth. • Estimate and measure the area of regular and irregular 2-D shapes. • Calculate area using square centimetres and square metres. • Compare visually square metres and square centimetres.	Page 103

Fifth Class			
Strand	Strand Unit	**Content/Learning Objectives**	**Curriculum**
	Weight	• Select and use appropriate instruments of measurement. • Estimate and measure weight using appropriate metric units.	Page 104
	Capacity	• Select and use appropriate instruments of measurement. • Estimate and measure capacity using appropriate metric units.	Pages 104, 105
	Time (Linkage and Integration)	• Read and interpret timetables and the 24-hour clock (digital and analogue). • Interpret and convert between times in 12-hour and 24-hour format.	Page 105
	Money (Linkage)	• Compare 'value for money' using unitary method.	Pages 106, 107.
Data	Representing and interpreting data (Linkage and Integration)	• Collect, organise and represent data using pictograms, single and multiple bar charts and simple pie charts • Read and interpret pictograms, single and multiple bar charts, and pie charts • Compile and use simple data sets • Explore and calculate averages of simple data sets • Use data sets to solve problems	Pages 108, 109
	Chance (Integration)	• Identify and list all possible outcomes of simple random processes • Estimate the likelihood of occurrence of events • Construct and use frequency charts and tables	Pages 109-111

Tables		• Addition • Multiplication	5 plus 1 equals 6 etc 3 5s equals 15 etc

Sixth Class

Strand	Strand Unit	Content/Learning Objectives	Curriculum
Number	Place Value	• Read, write and order whole numbers and decimals. • Identify place value in whole numbers and decimals. • Round decimals.	Page 88
	Operations	• Estimate sums, differences, products and quotients of decimals. • Add and subtract whole numbers and decimals (to three decimal places) without and with a calculator. • Multiply a decimal by a decimal, without and with a calculator. • Divide a four-digit number by a two-digit number without and with a calculator. • Divide a decimal number by a decimal, without and with a calculator.	Pages 88,89
	Fractions	• Compare and order fractions and identify equivalent forms of fractions. • Express improper fractions as mixed numbers and vice versa and position them on the number line. • Add and subtract simple fractions and simple mixed numbers. • Multiply a fraction by a fraction. • Express tenths, hundredths and thousandths in both fractional and decimal form. • Divide a whole number by a unit fraction. • Understand and use simple ratios.	Pages 89,90
	Decimals and percentages (Linkage and Integration)	• Use percentages and relate them to fractions and decimals. • Compare and order percentages of numbers. • Solve problems relating to profit and loss, discount, VAT, interest, increases, decreases.	Page 91
	Number theory Direct Numbers	• Identify simple prime and composite numbers. • Identify and explore square numbers. • Explore and identify simple square roots. • Identify common factors and multiples. • Write whole numbers in exponential form. • Identify positive and negative numbers on the number line	Page 92

	Direct Numbers	• Identify positive and negative numbers on the number line • Add simple positive and negative numbers on the number line
	Rules and Properties	• Know simple properties and rues about brackets and priority of operation (p.94) • Identify relationships and record symbolic rules for number patterns (p.95)

		Sixth Class	
Strand	**Strand Unit**	**Content/Learning Objectives**	Curriculum
	Variables	• Explore the concept of a variable in the context of simple patterns, tables and simple formulae and substitute values for variables.	Page 96
	Equations	• Translate word problems with a variable into number sentences. • Solve one-step number sentences and equations.	Page 97
Shape and space	2-D shapes	• Make informal deductions about 2-D shapes and their properties. • Use angle and line properties to classify and describe triangles and quadrilaterals. • Construct triangles from given sides and angles • Identify the properties of the circle. • Construct a circle of given radius or diameter. • Tessellate combinations of 2-D shapes. • Classify 2-D shapes according to their lines of symmetry. • Plot simple co-ordinates and apply where appropriate. • Use 2-D shapes and properties to solve problems.	Pages 98,99
	3-D shapes (Integration)	• Identify and examine 3-D shapes and explore relationships, including octahedron (faces, edges, and vertices). • Draw the nets of simple 3-D shapes and construct the shapes. • Recognise, classify and describe angles and relate angles to shape. • Recognise angles in terms of rotation. • Estimate, measure and construct angles in degrees. • Explore the sum of the angles in a	Page 99

	Lines and Angles	quadrilateral. • Recognize, classify and describe angles an relate angles to shape • Recognize angles in terms of a rotation • Estimate measure and construct angles in degrees • Explore the sum of the angles in a quadrilateral	
	Length	• Select and use appropriate instruments of measurement. • Rename measures of length. • Estimate and measure the perimeter of regular and irregular shapes. • Use and interpret scales on maps and plans.	

Sixth Class

Strand	Strand Unit	Content/Learning Objectives	Curriculum
	Area	• Recognise that the length of the perimeter of a rectangular shape does not determine the area of the shape. • Calculate the area of regular and irregular 2-D shapes. • Measure the surface area of specified 3-D shapes. • Calculate the area using hectares. • Identify the relationship between square metres and square centimetres. • Find the area of a room from a scale plan.	Page 103
	Weight	• Select and use appropriate instruments of measurement • Rename measures of weight.	Page 104
	Capacity	• Select and use appropriate instruments of measurement. • Rename measures of capacity. • Find the volume of cuboid experimentally.	Pages 104, 105
	Time (Linkage and Integration)	• Explore international time zones. • Explore the relationship between time, distance and average speed.	Page 105
	Money (Linkage)	• Explore value for money. • Convert other currencies to Euro and vice versa.	Pages 106, 107.
Data	Representing and interpreting data (Linkage and Integration)	• Collect, organise and represent data using pie charts and trend graphs. • Read and interpret trend graphs and pie charts. • Compile and use simple data sets. • Explore and calculate averages of simple data sets. • Use data sets to solve problems.	Pages 108, 109
	Chance (Integration)	• Identify and list all possible outcomes of simple random processes. • Estimate the likelihood of occurrence of events: order on a scale from 0 to 100%, 0 to 1. • Construct and use frequency charts and tables.	Pages 109-111

Tables		• Addition • Multiplication	5 plus 1 equals 6 etc 3 5s equals 15 etc