

Scoil Mhuire

U.R.11894I

Policy for the Teaching of Mathematics

The process of planning for a school is a work constantly in progress, comprising research, practice and evaluation at all times. The initial stage of drawing up or customising the curriculum to suit our own needs was perhaps the most valuable and while we have updated the programmes since then, we have not completely deleted all of our original work. Rather we have sought to develop each of our policies and subject programmes, to create a framework from which each teacher can draw, a rich source of topics and methodologies rather than a rigid programme from which no one can deviate. Our approach has been that we must first and foremost value and acknowledge what is already established good practice or content and not bring in change merely for the sake of change.

We hope in this way to remain responsive to the needs of each child, the dynamics of each class group, the talents of each teacher, the current events of each year and the rich tapestry of life as it affects Scoil Mhuire.

The Cuntas Miosuil remains the tool with which we plan for each year and avoid unnecessary overlap and repetition.

In this way we hope to keep adding to or altering our Plean Scoile through constant evaluation and enthusiastic teachers meetings, thereby maintaining an energy and freshness in everything we do.

Introduction:

All members of the teaching staff of Scoil Mhuire drew up this document. It describes our agreed approach to the teaching of Mathematics in this school. It is intended primarily for ourselves as a staff to ensure consistency and continuity in our approach and to help improve the children's learning of Maths. It is also intended to serve as part of an induction to the school for new teachers and for other partners in the education process.

The Board of Management approved this policy in February 2004, 2006, 2010, and 2013/14 under School Self Evaluation.

Vision Statement:

One of our principal aims at Scoil Mhuire is to help each child to develop to her best potential. We want each child who leaves the school in 6th Class to be able to

- work with number in real life
- recall basic number facts
- think logically
- solve day-to-day problems as they meet them
- interpret data
- have the mathematical skills to lead a full life as a child and later as an adult.

Aims:

Our primary aims in the teaching of Mathematics are:

- To develop a positive attitude towards mathematics and an appreciation of both its practical and aesthetic aspects
- To develop problem-solving abilities and a facility for the application of mathematics to every-day life
- To enable children to use mathematical language effectively and accurately
- To enable children to acquire an understanding of mathematical concepts and processes to her appropriate level of development and ability
- To enable the child to acquire proficiency in fundamental mathematical skills and in recalling basic number facts
- Number as it relates to and is enhanced by ICT - including Coding

Curriculum Content and Broad Objectives:

The content of our programme is based on the objectives in the Revised Curriculum, and on the overview outlined on page 70 of the teachers' guidelines.

Methods:

We believe that it is very important for children to be allowed to discuss mathematical problems together in class, to explore differing points of view and to reach correct solutions in a process of working out rather than by learning by rote. This will require talk and discussion. There is a place for rote learning in the memorisation of number facts, but only after a child has fully understood these. We believe that children usually learn best through the use of concrete materials, and these will be available and will be used where appropriate. Our approach to the teaching of maths is a collaborative one where children are allowed to discuss together, help each-other, and through the use of games, and indeed of the every-day environment such as timetables, shopping lists, tourist brochures, etc. learn mathematics in a way that is relevant to their own experiences.

Children will be encouraged to use a variety of strategies to solve problems. These will include making a chart or table of the information, looking for patterns in a problem, making a guess and testing their answer out, and solving a simpler version of the problem. Children will be encouraged to re-read the problem several times, and in class discussion they will always be taught to respect the ideas of others. Having solved a particular problem, children will be asked to invent other problems themselves, offering a similar challenge.

Layout of Work:

In Junior and Senior Infants, children will use squared paper for Maths and they will be taught to place one number in each box and one numerical sign in each box. They will leave a space between each sum.

In Third Class children will be able to write a headline on the page with the date, the topic being covered and the relevant page of the textbook. By Third Class children will no longer write in the textbook.

Children will be taught to show the process they used in all problem solving.

Mathematical Language:

+ The *plus* symbol is introduced in Junior Infants. Initially "4+3" is read as "4 and 3". Later it is read as "4 add three". Finally, near the end of Senior Infants, it is read as "4 plus 3". In First and subsequent classes other words connected with the symbol, such as "add", "make", "altogether" are explained and used.

= The *equals* symbol is introduced in Junior Infants. Initially, $4+3=7$ is read as 4 and 3 altogether make 7. Near the end of Senior Infants it is read as 4 plus 3 equals 7.

- The *minus* symbol is introduced in First Class. Initially, $7-3$ is read as 7 take away 3. Later it is read as 7 minus 3.

Teaching Number Facts:

The teaching of number facts really begins in Junior Infants with number stories. In Senior Infants the children learn through skip counting and sequencing. Children begin to learn multiplication facts in Third Class.

Teaching Subtraction:

The minus is introduced in First Class. Initially $7-3$ is read 7 take away 3, and later, towards the end of Second Class, as 7 minus 3.

Children will learn subtraction with re-grouping in Second Class. We will teach it as follows:

T	U	
6	1	First check the sign, and then read the sum.
<u>-1</u>	<u>9</u>	Starting at the top unit, we say one unit take away Nine units. This cannot be done so we need to take one ten and break it into ten units.

After changing and re-grouping we have five tens and eleven units. We start again:

T	U	
5	11	Always remember: we say "top unit, take away bottom unit". Starting at the top unit we say eleven units
6	1	take away nine units gives two units. The tens part of
<u>-1</u>	<u>9</u>	the sum is completed in the same way.
4	2	

Teaching Multiplication:

We expect all children to know their multiplication tables by the end of Fourth Class. In short multiplication we will write the T U on top:

TU	TU
27	27
<u>X 6</u>	<u>x 6</u>
2	162

We say six times seven is 42. That is, four tens and two units. We write down the two units and carry the four tens which we record on top of the other tens.

We then say six two's are twelve and four are sixteen.

In long multiplication we will use the distributive method i.e. 36×24 will be written first of all as $36 \times 4 + 36 \times 20$. We will place a lot of emphasis on estimation (rounding off). We will use calculators to check answers.

Teaching Short Division:

Children are taught to record short division in the following manner initially:

$4 \overline{) 124}$ and we explain this in terms of sharing 124 equally among four children. We also explain it in terms of asking children to find out how many sets of four can be made of or are in 124. Initially children will write H T U over the appropriate figures until they understand place value.

Teaching Long Division:

Long Division will be set out in the following manner: $14 \overline{) 378}$

Children will estimate first: $378 \div 14$

$$380 \div 10 = 38$$

and then judge is this a good estimate or not?

It may help the child if the child shows the multiplication process in the margin:

$$1 \times 14 = 14$$

$$2 \times 14 = 28$$

$$3 \times 14 = 42$$

$$4 \times 14 = 56 \text{ etc.}$$

Teaching Fractions:

Fractions are introduced in First Class with halves and quarters. In 2nd and Third Class children will look at all other fractions. In Fourth Class children learn simple addition of fractions and equivalent forms of fractions.

Teaching Decimal Fractions:

We will introduce decimal fractions in 3rd Class. Children will always write the symbols on top, hundredths, tenths, etc. They will be taught to put the decimal point in the middle of the square.

Teaching Improper Fractions:

Improper fractions will only be introduced when pupils are very familiar with equivalent fractions.

Assessment:

From 1st to 6th Class, children will normally have a tables test and a mental maths test each week. These classes will also normally have a Maths test at the end of each unit. Records will be kept of these tests and these will form the basis of the annual school report

We will administer the Sigma-T tests to all classes from 1st to 5th inclusive in November each year. The teacher, a copy given to the Learning Support Teacher and copies held in the school office, will keep records of these tests. Children who are ranked in the tenth percentile or below will be considered for learning support.

Assisting Children with Special Needs:

The learning support teacher will work closely with the class teacher to establish the nature of the learning difficulty, and they will liaise together on how to support the child who has difficulties (see our Learning Support Policy).

The child will work with the Learning Support teacher outside of the classroom in individual lessons.

Extension material will be available in each classroom for gifted children who finish work early or who need additional challenges. Work at simpler levels will also be available for those who need it.

Homework:

Children will have oral and/or written maths homework in 1st & 2nd Class. Written homework will generally be given from 3rd Class upwards, depending on the topic being covered. There will be no homework on Fridays.

Time Allocation for Maths:

Junior & Senior Infants will spend approximately 2¼ hours on Maths each week. All other classes will spend 3 hours & 20 minutes on Maths each week.

I.T.

The school uses I.T. regularly to support the teaching of Maths.

Planning:

Each class teacher has an agreed annual Scheme of Work for Mathematics, which s/he will follow. S/he will make fortnightly plans for Mathematics and these will be handed into the office retrospectively as Cuntas Miosuil.

Differentiation:

Provision will be made in each class for the individual needs of each child.

Integration with other subject areas:

Each teacher will actively seek opportunities to integrate mathematical work with other subject areas. Mathematical skills will be used in Science, Geography and Art in particular. We will also make every effort to ensure that Mathematical work is taught within the context of the child's daily life. Use will be made of everyday items such as shopping bills,

Marking:

Marking will be done by the teacher and occasionally by the children themselves. On the occasions when the children mark their own or each other's work, the teacher will see every child's work. Corrections will be done either orally or in writing.

Review Date:

This policy will be reviewed in Autumn 2020

Strands	Infant Classes	1 st & 2 nd Class	3 rd & 4 th Class	5 th & 6 th Class
Early Mathematical Activities	Classifying Matching Comparing Ordering			
Number	Counting Comparing and Ordering Analysis of Number	Counting and Numeration Comparing and Ordering Place Value Operations <i>Addition</i> <i>Subtraction</i> Fractions	Place Value Operations <i>Addition</i> <i>Subtraction</i> <i>Multiplication</i> <i>Division</i> Fractions Decimals	Place Value Operations <i>Addition</i> <i>Subtraction</i> <i>Multiplication</i> <i>Division</i> Fractions Decimals Percentages Number Theory
Algebra	Extending Patterns	Exploring and Using Patterns	Number Patterns and Sequences Number Sentences	Directed Numbers Rules and Properties Variables Equations
Shape and Space	Spatial Awareness 2D Shapes 3D Shapes	Spatial Awareness 2D Shapes 3D Shapes Symmetry Angles	2D Shapes 3D Shapes Symmetry Lines and Angles	2D Shapes 3D Shapes Symmetry Lines and Angles
Measures	Length Weight Capacity Time Money	Length Area Weight Capacity Time Money	Length Area Weight Capacity Time Money	Length Area Weight Capacity Time Money
Data	Recognising and Interpreting Data	Representing and Interpreting Data	Representing and Interpreting Data Chance	Representing and Interpreting Data Chance

Equipment available

Number:

- Counting bears / Unifix cubes (available Junior Inf. and Resource Room)
- Cubes and lollipop sticks (Junior and Senior Infants)
- Abacus
- Soft number dice
- Number boards
- Wooden number strips and 100 squares.
- Ease Boards
- Numicon
- Playing Cards

Fractions:

- Percent cubes
- Fraction circles
- Fraction strips
- Fraction box

Weight:

- plastic metric scales – liquid/solid with plastic and metal weights
- 1 simple plastic balance
- 2 wooden balance scales
- 1 plastic balance with numbers on it
- 1 set of metric weights
- 1 box of yellow weights

Capacity:

- Measuring cylinders
- 2 funnels
- 1 bucket (5 litres)
- 8 measuring jugs
- Large Water Kit

Shape and Space:

- Plastic 2-D shapes
- Wooden 3-D shapes
- Polydrons – construction
- Plastic 3-D shapes
- Labels of shape names
- Chart of 3-D shapes
- Tangrams
- Foam pattern blocks
- Strategic counter game

Place Value:

- Place value cards
- Base ten material

- calculators
- Hundred Squares

Time:

- 3 Clocks
- 27 plastic time cards
- Time matching cards
- Large time kit including 24 hour clocks and start /finish sliders

Length:

- 3 meter sticks (unmarked)
- 2 Trundle wheels

Area:

- An Introduction to Area box-set

Others:

- Unifix cubes
 - Pegboards
 - Tables workbooks (Prim Ed)
 - Floor Games
- Number lines in covered courtyard

Mathematics Language and operations Layout.

Junior Infants

Add; and; makes; is the same as

The plus sign is introduced +

Senior Infants

As above

Also: plus ; equals

= equals sign is introduced

$2 + 3 = 5$ language :- 2 and 3 makes 5
2 plus 3 equals 5

2 always read from the top down
 $\begin{array}{r} 2 \\ +3 \\ \hline 5 \end{array}$ 2 and 3 makes 5
5 2 plus 3 equals 5

$3+2+1 = 6$ The addition of 3 numbers is introduced

3 Reading from the top down
2 3 plus 2 plus 1
 $\begin{array}{r} 3 \\ 2 \\ +1 \\ \hline 6 \end{array}$

First Class

Take away; less than; left; more than; minus

- minus sign is introduced
Addition tables.

Addition:

TU	TU	TU	TU
14	12	18	18
$\begin{array}{r} +3 \\ \hline 17 \end{array}$	$\begin{array}{r} +11 \\ \hline 23 \end{array}$	$\begin{array}{r} +6 \\ \hline 24 \end{array}$	$\begin{array}{r} +16 \\ \hline 34 \end{array}$

Two digit addition

Two digit addition with renaming

Units are always dealt with first

Subtraction

$5 - 1 = 4$ read from left to right

5 take away one equals 4

Vertical Subtraction

$$\begin{array}{r} 7 \\ - 3 \\ \hline 4 \end{array}$$

Start at the top
7 take away 3 equals 4

$$\begin{array}{r} \text{TU} \\ 16 \\ - 4 \\ \hline 12 \end{array}$$

One digit subtraction from a 2 digit number
units first - top down
6 take away 4 equals 2
tens - 1 take away 0 equals 1

Two digit subtraction:

$$\begin{array}{r} \text{TU} \\ 26 \\ - 12 \\ \hline 14 \end{array}$$

Two digit subtraction from a 2 digit number without regrouping

The following summary gives an idea of what is covered in each class especially in the area of number and number operations. In each class there is also a development of the themes of money, time, capacity, weight, length, area, 2-D and 3-D shapes, pre-algebra and algebra puzzles, and more.

Parents should remember that we are officially in a metric system, i.e. kilometres, kilogrammes, litres, Euro.

Multiplication Tables only need to be learned up to ten times even though some of the books available still go to twelve times.

Junior Infants:

Consolidation of the concepts of 0 – 5 although children may count further than that, but we concentrate on understanding, e.g. the concept of each number and its make-up

3	0+3=3	[] + [***] = 3
	1+2=3	[*] + [**] = 3
	2+1=3	[**]+ [*] =3
	3+0=3	[***] + [] =3

Classifying objects by one variable.
e.g red things, square things, hard things,

Creating simple patterns with cubes or colouring, i.e. pre-algebra

Ordering things up to 5 – first , second, third, etc.

Simple place – beside, behind, first, last.

Simple shapes – circle , square, triangle, rectangle, i.e. 2-D shapes
Some 3-D shapes [cylinder] that can roll, and that can't roll

Relationships – matching the numeral to the number of objects up to 5

Relationships – part to whole, less, more.

Capacity and length: full, empty, holds more, holds less
Long, short, longer, shorter, wide, narrow.

Money: recognition of 1c, 2c, 5c. Matching and problem solving.

Time: Day , night, visual timetable, before, after.

Senior Infants

Number : 0-10 Developed as above for junior infants.

Adding to each of the topics above according to the curriculum.

Continuing with pre-algebra, making patterns that are a little more complicated.

Ordering things up to 10 – first, second,tenth. [orally]

Shapes: rectangle, diamond, 3-D shapes – cube, ball/sphere, cylinder,
Straight edge, curved, round, flat , match.

Relationships – extending as above.

Money: recognition of 10c, 20c Simple shopping problems.

Time - days of the week

Seasons,

Sequence events

Read time on the hour, e.g. one o'clock, two o'clock

Parents – do not start young children on a digital or 24 clock. Learning the time on the analogue clock also teaches fractions, angles and the geometry of the circle for much, much later!

Weight- using a simple balance – heavier than , lighter than

Length- measure with lollipop sticks, estimate which is longer/shorter

First Class:

Number: 0-99, recognising all and filling in the missing numbers on the hundred square. Counting in tens orally. Estimating - very important skill in maths, teaching children to guess first and then check the exact answer against their guess/estimate

Recognising numbers written as words up to 20, e.g. thirteen.

Place value - tens and units

Operation involving 3 addends - $3+2+5= []$

Subtraction: horizontal and vertical without regrouping.

Money: 50c. Problems to be read, shopping list

Classifying objects – an introduction to sets – what are equivalent sets
What is outside this set/does not belong?
Complement of set.

Fractions: half

Time : o'clock and half past

Second Class

Number up to 999
Practice on the 100 square
Number Patterns
Addition and subtraction tables
Place value.

A lot of oral work on breaking down numbers which is very important, e.g.
13 = one ten and 3 units or 13 units
23 = 2 tens and 3 units or 1 ten and 13 units

Addition and subtraction with renaming or regrouping, i.e.

$$\begin{array}{r} 12 \\ + 9 \\ \hline 21 \end{array}$$

$\begin{array}{r} 23 \\ - 9 \\ \hline 14 \end{array}$	We say 3 take away 9 - I can't do change_my tens 23 becomes one ten and 13 units 13 take away 9 leaves 4 1 take away 0 leaves 1 answer = 14
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Introduction of fractions – halves and quarters
Also half past and quarter to and quarter past in time

Area – crude measure – hand spans

Third class

Number – more work on large numbers up to 999
Place value

159 = 1 hundred and 5 tens and 9 units or
1 hundred and 4 tens and 19 units

208 = 2 hundreds and no tens and 8 units or
1 hundred and 10 tens and 8 units
1 hundred and 9 tens and 18 units

one cent coins and ten cent
Coins are ideal for this work
or Diennes blocks

Repeated addition and multiplication.

Multiplication up to a 2-digit number multiplied by 2 up to 9
Beginning of simple division and simple fraction problems

Fourth class

Number up to 999
Long multiplication
Division.

Children are taught to guess and estimate when doing multiplication and division and this is building on the skill of estimation up to now.
Some children may find this too much and are better sticking to the process of the multiplication or division on its own.

In 4th Class, children are introduced to the concept of decimals , not only in relation to money or metric measure, but as a concept in itself.
They also start to show how decimals and fractions can be interchanged.

$$0.1 = 1/10$$

$$0.5 = 1/2$$

$$0.01 = 1/100$$

This is easily related to money but the aim is also to show equivalence :
Fraction to decimal and vice versa.

Fifth Class

More difficult number problems involving all 4 operations: addition, subtraction, multiplication and division.

Decimals, fractions and introduction of percentages.

You can buy a fraction cube tower and one for decimals and percentages.
No need to buy all 3 – buy one and write the equivalent values on 2 other sides.
Permanent marker for the lighter colours and tippex will write on the darker colours.

Problem solving is a skill that has been building at the appropriate level all the way up and now forms a great deal of the work.

An introduction to the language of geometry regarding the square, rectangle and circle, - length, width, radius, diameter, circumference, diagonal, angle

Sixth Class

A revision of much that has gone before and again an increase in the difficulty of Problems and operations.

Chance, ratio, and equations. Number puzzles with $<$, $>$, $=$

Area and Volume – more detail.

Tip: Do not get rid of the 6th Class maths book for a year at least.
It is a familiar friend and while the numbers may be smaller, almost all of the Ordinary level Junior Cert Course is here.!!

The only areas not covered to that level are algebra, geometry, trigonometry and imaginary numbers.

Early Mathematical Activity

Strands	Strand Unit	Emphasis	Language
Early Mathematical Activity:	<ul style="list-style-type: none"> • Classifying • Matching • Comparing • Ordering 	Does not apply	
Number:	<ul style="list-style-type: none"> • Counting and numeration • Comparing and ordering • Place value • Operations <ul style="list-style-type: none"> ➤ Addition ➤ Subtraction ➤ Multiplication ➤ Division • Fractions • Decimals 	<ul style="list-style-type: none"> • Counting number of objects in a set. Read, write and order numbers 1 - 100. • Compare equivalent and non-equivalent sets 0 - 20. • Using language of ordinal number explore, identify and record place value 0 - 99. • Develop an understanding of addition by combining or partitioning sets using concrete material 0 - 20. • Explore, develop and apply the commutative, associate and zero properties of addition. • Develop and recall mental strategies for addition facts within 20. • Construct number sentences and number stories to solve problems involving addition within 20. • Add numbers with and without renaming within 99. • Explore and discuss repeated addition and group counting. • Develop an understanding of subtraction as deducting as complimenting and difference 0 - 20. • Develop and recall mental strategies for subtraction 0 - 20. • Construct number sentences and number stories to solve problems 0 - 20. • Estimate differences within 99. • Subtract numbers without renaming within 99. Use the symbols +/-(). • Establish and identify half of sets to 20. 	<p>Estimate, count, less than, more than</p> <p>Calendar, first, second, etc. Tens, units.</p> <p>How many have I left? How many more do I need? How many more? How many less? Count on, count back, double</p> <p>Equals, take away, minus, subtract, as, half, quarter.</p>
Measures:	<ul style="list-style-type: none"> • Length • Weight • Capacity • Time • Money 	<ul style="list-style-type: none"> • Estimate, compare, measure and record, length, weight and capacity using non-standard units. • Select and use appropriate non-standard measuring units and instruments. • Estimate, measure and record, weight and capacity using standard measuring units (metre, a.m., kg, g, litre). • Solve and complete practical tasks and problems involving length, weight and capacity. • Use the vocabulary of time to sequence events. • Read and record time using simple devices. • Read time using hour and half hour analogue 	<p>Length, width, height, measure, a bit more than, a bit less than</p> <p>Heavy, heavier, heaviest, light, balance.</p> <p>Kilogram, gram, half kg, quarter</p> <p>Pour, fill, empty, holds more, same amount as.</p> <p>Litre, half litre, quarter litre</p>

		<p>clock.</p> <ul style="list-style-type: none"> • Read date, day and month using calendar. • Recognise, exchange and use coins up to the value of €20, write the value of a group of coins. • Record money in cents and euro. 	
Pattern and sequence / Algebra:	<p>Extending and using patterns</p> <ul style="list-style-type: none"> • Colour, shape, size patterns • Number patterns and sequence • Number sentences (if applicable) <p>Directed numbers Rules and properties Variables Equations</p>	<ul style="list-style-type: none"> • Recognising pattern including odd and even numbers. • Exploring and using numbers in addition facts. • Understand use of frame to show the presence of an unknown number. 	
Shape and space:	<ul style="list-style-type: none"> • Spatial awareness • 2D and 3D shapes • Symmetry • Lines and angles 	<ul style="list-style-type: none"> • Explore, discuss and use the vocabulary of spatial relations. • Sort, describe, compare and name 2D shapes. Construct and draw 2D shapes. • Describe shapes referring to size, corners, number and length of sides. • Identify halves of 2D shapes, combine and partition 2D shapes. Identify quarters of 2D shapes. • Describe, compare and name 3D shapes and discuss the use of 3D shapes in the environment. • Solve and complete practical tasks and problems involving 2D and 3D shapes. Explore the relationship between 2D and 3D shapes. • Identify line and symmetry in shapes in the environment. Explore and recognise angles in the environment. 	<p>Between, underneath, on top, right.</p> <p>Square, rectangle, triangle, oval.</p> <p>Corners, sides, length, half, ...</p> <p>Cube, cuboid, cylinder, sphere, containers, symmetry.</p>
Data:	<ul style="list-style-type: none"> • Recognising and interpreting data • Chance 	<ul style="list-style-type: none"> • Sort and classify objects by two and three criteria. • Represent and interpret data in two, three or four rows or columns using real models and pictures. • Represent, read and interpret simple tables and charts (pictograms). 	

Strand: Number

Junior Infants	<ul style="list-style-type: none"> • Count objects in set: 1-10. • Compare equivalent and non-equivalent sets 1-5 by matching without using symbols. • Order sets of objects by number, 1-5. First, last... • Explore components of number 1-5. Combine sets of objects - to total of 5 (cf. addition file). Partition sets of objects 1-5. • Numeration: develop an understanding of the conservation of number 1-5. Read, write and order numerals 1-5. • Identify the empty set and the number zero. Tell at a glance the number of objects in a set 1-5. • Solve simple oral problems 0-5.
Senior Infants	<ul style="list-style-type: none"> • Count objects in set: 0 - 20. • Physically counting on using floor tiles, etc. 'count on', 'jump on', 'go on' • Compare equivalent and non-equivalent sets 0 - 10. Order sets of objects by number, 0 - 10. • Ordinal number: First, second, third, last etc. • Explore components of number 1-10. • Combine sets of objects - to total of 10 (story of number). • Partition sets of objects 0 - 10. • Use the symbols + and = to construct word sentences involving addition. • Numeration: develop an understanding of the conservation of number 0 - 10. • Read, write and order numerals 0 - 10. • Identify the empty set and the number zero. • Estimate the number of objects in a set 2 - 10. • Check estimate by counting. • Solve simple oral problems 0 - 10.
First class	<ul style="list-style-type: none"> • Count the number of objects in a set. 'count on', 'jump on', etc. • Read, write and order numerals 0 - 99 (using number strips and hundred squares). • Estimate the number of objects in a set 0 - 20. • Compare equivalent and non-equivalent sets 0 - 20. • Order sets of objects by number. (See the language of ordinal numbers 1st to 10th.)
Second Class	<ul style="list-style-type: none"> • Count the number of objects in a set. • Read, write and order numerals 0 - 199. • Estimate the number of objects in a set 0 - 20 (extra practice using concrete materials). • Compare equivalent and non-equivalent sets <, >, =. (always read from the left, wide mouth to the bigger number). • Order sets of objects by number. • Use the language of ordinal numbers 1st to 31st using the calendar.

Place Value

First Class	<ul style="list-style-type: none">• Place Value: Explore, identify and record 0-99.• Group and count in 10's and units using cubes, counters, sticks, and coins (1c and 10c), base ten materials and notation boards.• Express groups of counters as units or as tens & units pictorially and on abacus. 100-square
Second Class	<ul style="list-style-type: none">• Place Value: Explore, identify and record 0-199.• Group and count in 10's and units using cubes, counters, sticks, and coins (1c and 10c), base ten materials and notation boards.• Express groups of counters as units or as tens & units pictorially and on abacus.• Extend grouping and renaming to include the 100, in 10's.• Rename numbers as one hundred, tens and units.• Represent numbers using place value material: coins, number cards, word cards, number line.• Number patterns.• Comparing and ordering numbers.• Making numbers from digit cards.• Importance of place of zero.• Round whole numbers to nearest 10.
Third Class	<ul style="list-style-type: none">• Place Value: Identify place value in whole numbers - 999.• Read, write and order 3-digit numbers.• Round whole numbers to nearest 10 / 100.• Introduce and rename tenths as decimal fractions.• Identify place value in decimals - to one decimal place
Fourth Class	<ul style="list-style-type: none">• Place Value: Identify place value in whole numbers - 9999.• Read, write and order 4-digit numbers.

	<ul style="list-style-type: none"> • Round whole numbers to nearest 1000. • Identify place value in decimals - to two decimal places. • Significance of 0. • (Use of Dienes blocks - flat = unit; long = one tenth; small cube = one hundredth)
Fifth Class	<ul style="list-style-type: none"> • Place Value: Read, write and order whole numbers and decimals. (Include larger numbers and decimals). • Identify place value in whole numbers and decimals. • Round whole numbers and decimals. • Estimate sums, differences, products and quotients of whole numbers. • Add and subtract whole numbers and decimals(to 3 decimal places) with and without a calculator. • Multiply a decimal (- 3 places) by a whole number with and without a calculator. • Divide a three digit number by a two digit number with and without a calculator. • Divide a decimal number by a whole number with and without a calculator. <p><i>*Note: When multiplying/dividing a decimal by ten/hundred, the numbers move not the decimal point.</i></p>
Sixth Class	<ul style="list-style-type: none"> • Place Value: Read, write and order whole numbers and decimals. (Include larger numbers and decimals). • Identify place value in whole numbers and decimals. • Round decimals. • Estimate sums, differences, products and quotients of decimals. • Add and subtract whole numbers and decimals(to 3 decimal places) with and without a calculator. • Multiply a decimal (- 3 places) by a decimal with and without a calculator. • Divide a four digit number by a two digit number with and without a calculator. • Divide a decimal number by a decimal with and without a calculator (*not in school text book).

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Class	Tables	Mathematical Language
Junior Infants		and
Senior Infants		and → add ← →
1 st Class	Doubles Near doubles +10 (3 + 10 =) +0 (3 + 0 =) +1 (3 + 1 =) +2 +3	plus, equals, = is the same as 0 + 10 = 10 (zero plus ten is ten)
Second Class	Addition tables to 10. (Note: subtraction tables will not be memorised.)	
Third Class	Revision of addition tables. Skip counting in 2's, 4's, 8's, 5's, 10's, 3's, 6's, 9's, 7's Multiplication tables in the same order (2's, 4's, 6's...) including 11 X 2 = 22 and 12 X 2 = 24	0 X 2 = 0 (no twos are nothing) 1 X 2 = 2 (one two is two) 2 X 2 = 4 (two twos are four) 7 X 2 = 14 (seven twos are fourteen)
Fourth Class	Revision of multiplication tables.	
Fifth Class	Revision of multiplication tables. (Note: Division tables will not be memorised.)	
Sixth Class	Revision of multiplication tables. Equivalence tables e.g. $\frac{1}{2} = 0.5 = 50\%$ $\frac{1}{2}, \frac{1}{4}, 1/8, 1/10, 1/3.$	

Addition

Junior Infants	<ul style="list-style-type: none"> ✚ 0 - 5. Story of Numbers (orally). ✚ No plus symbol. 3 and 2 make 5
Senior Infants	<ul style="list-style-type: none"> ✚ 0 - 10. ✚ Story of Numbers (construct word sentences). ✚ Symbols + and = ✚ Counting on with and without number strip. ✚ Problems based on these.
First Class	<ul style="list-style-type: none"> ✚ Addition: 0 - 20. ✚ Commutative ($6+2 = 2+6$) associative $(2+3) + 5 = 10$, $2 + (3+5) = 10$ & zero properties ($7 + 0 = 7$) of addition. ✚ Develop mental strategies for addition facts within 20. ✚ Number sentences & number stories. ✚ Add numbers with and without renaming -99. ✚ Counting in 2s, 5's 10's.
Second Class	<ul style="list-style-type: none"> ✚ Addition: 0 - 20. ✚ Commutative ($6+2 = 2+6$) associative $(2+3) + 5 = 10$, $2 + (3+5) = 10$ & zero properties ($7 + 0 = 7$) of addition. ✚ Develop mental strategies for addition facts within 20. ✚ Number sentences & number stories. ✚ Add numbers with and without renaming -99. ✚ Mental calculations. ✚ Recording addition. ✚ Addition of 10 to multiples of 10 ($20 + 10$) and to other numbers ($36 + 10$).

	<ul style="list-style-type: none"> ✚ Add multiples of 10 to other numbers (20 + 35) ✚ Repeated addition and group counting. ✚ Practical problem solving
Third Class	<ul style="list-style-type: none"> ✚ Addition and Subtraction: ✚ Add with and without renaming - 999. ✚ Know and recall addition & subtraction facts. ✚ Solve word problems involving addition and subtraction.
Fourth Class	See school plan on fractions and decimals, measures
Fifth Class	See school plan on fractions and decimals, measures
Sixth Class	See school plan on fractions and decimals, measures,

Subtraction

First Class	<ul style="list-style-type: none"> • Subtraction: Understand subtraction as deducting, complementing and difference. • Develop mental strategies for subtraction 0 - 20. • Number sentences and number stories - 20. • Problem solving using subtraction. • Counting back. • Estimate differences within 99. • Subtract numbers without renaming - 99. • Use the symbols +, -, = (P.45) • One step problems using addition and subtraction.
Second Class	<ul style="list-style-type: none"> • Subtraction: Understand subtraction as deducting, complementing and difference. • Develop mental strategies for subtraction 0 - 20. • Number sentences and number stories - 20. • Problem solving using subtraction. • Estimate differences within 99. • Subtract numbers without and with renaming - 99.

	<ul style="list-style-type: none"> • Use the symbols +, -, =, <, > (P.45) • One and two step problems using subtraction.
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Multiplication

First Class	
SecondClass	
Third Class	<ul style="list-style-type: none"> ✚ Multiplication: ✚ Develop an understanding of multiplication as repeated addition. ✚ Explore, understand and apply the zero, commutative and distributive properties of multiplication. ✚ Develop multiplication facts within 100. ✚ Multiply one-digit or two-digit numbers by 0 - 10. ✚ Practical problem solving using multiplication.
Fourth Class	<ul style="list-style-type: none"> ✚ Multiplication: ✚ Explore, understand and apply the zero, commutative and distributive properties of multiplication. ✚ Develop multiplication facts within 100. ✚ Multiply a two digit or three digit number by one or two digit number. ✚ Estimation. Use of calculator to check estimates. ✚ Practical problem solving using multiplication.
Fifth Class	<ul style="list-style-type: none"> ✚ Multiplication : ✚ Multiply a decimal (- 3 places) by a whole number with and without a calculator. ✚ Multiply a fraction by a whole number.
Sixth Class	<ul style="list-style-type: none"> ✚ Multiplication: ✚ Multiply a decimal (- 3 places) by a decimal with and without a calculator. ✚ Multiply a fraction by a fraction.

Division

<p>✚ Third Class</p>	<ul style="list-style-type: none">✚ Division: Develop an understanding of division as sharing and repeated subtraction.✚ Develop division facts within 100.✚ Divide one-digit or two-digit numbers by one digit numbers with and without remainders.✚ Represent division using number sentences.✚ Estimation. Rounding up and down.
<p>✚ Fourth Class</p>	<ul style="list-style-type: none">✚ Division: Develop an understanding of division as sharing and repeated subtraction.✚ Develop division facts within 100.✚ Divide two-digit or three-digit numbers by one digit numbers with and without remainders.✚ Estimation. Use of calculator to check estimates.
<p>✚ Fifth Class</p>	<ul style="list-style-type: none">✚ Division: Divide a three digit number by a two digit number with and without a calculator.✚ Divide a decimal number by a whole number with and without a calculator.
<p>✚ Sixth Class</p>	<ul style="list-style-type: none">✚ Division: Divide a four digit number by a two digit number with and without a calculator.✚ Divide a decimal number by a decimal with and without a calculator.✚ Divide a whole number by a unit fraction. Understand and use simple ratios.

Fractions- leading to the same work on Decimals and Percentages

First Class	<ul style="list-style-type: none"> ✚ Fractions: Establish and identify half of sets to 20.
Second Class	<ul style="list-style-type: none"> ✚ Fractions: Establish and identify half and quarter of sets to 20.
Third Class	<ul style="list-style-type: none"> ✚ Fractions: ✚ Identify fractions and equivalent forms of fractions with denominators 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 understanding of relationship between fractions and division. ✚ Calculate a unit fraction of a number and calculate a number given a unit fraction of the number. ($\frac{1}{4}$ of 32 = 8. $\frac{1}{8}$ of a number is 6, find the number). ✚ Problem solving using fractions.
Fourth Class	<ul style="list-style-type: none"> ✚ Fractions: ✚ Identify fractions and equivalent forms of fractions with denominators 2,3,4,5,6,8,9,10 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 ($\frac{3}{10}$ of a number = 45, find the number). ✚ Express one number as a fraction of another number ($3 = \frac{1}{2}$ of 6). ✚ Problem solving using fractions.
Fifth Class	<ul style="list-style-type: none"> ✚ Fractions:

	<ul style="list-style-type: none"> ✚ Compare and order fractions and identify equivalent forms of fractions with denominators 2-12. ✚ Express improper fractions as mixed numbers and v.v. and position them on number line. ✚ Add and subtract simple fractions and simple mixed numbers. ✚ Multiply a fraction by a whole number. ✚ Express tenths, hundredths and thousandths in fraction and decimal form.
Sixth Class	<ul style="list-style-type: none"> ✚ Fractions: Compare and order fractions and identify equivalent forms of fractions. ✚ Express improper fractions as mixed numbers and v.v. and position them on number line. ✚ Add and subtract simple fractions and simple mixed numbers. ✚ Multiply a fraction by a fraction. ✚ Express tenths, hundredths and thousandths in fraction and decimal form. ✚ Divide a whole number by a unit fraction. Understand and use simple ratios.

Number Theory

Fifth Class	<ul style="list-style-type: none"> • Number Theory: Identify simple prime and composite numbers. • Identify square and rectangular numbers. • Identify factors and multiples.
Sixth Class	<ul style="list-style-type: none"> • Number Theory: • Identify simple prime and composite numbers. • Identify and explore square numbers. • Identify common factors and multiples. • Explore and identify simple square roots. • Write whole numbers in exponential form ($1000 = 10 \times 10 \times 10 = 10^3$)