Scoil Mhuire, Maigh Cuilinn
Mathematics Policy

Introductory Statement

Rationale

This policy was originally drafted and adopted in Scoil Mhuire, Maigh Cuilinn during the 2004/2005 school year. It was reviewed, revised and updated by the teaching staff of the school during the final term of the 2012/2013 school year.

The current practices in relation to the teaching of mathematics were established and compared and contrasted to those outlined in the existing policy. Methodologies and teaching strategies, over emphasis on certain strands to the detriment of others, consistency in the use of mathematical language throughout the school, assessment and record keeping procedures and textbooks and resources for active learning in use by teachers emerged as key areas to be addressed in a revised Maths Policy. It was established that consistency and uniformity in relation to certain key areas could be improved upon and more time needed to be given to the Strand relating to Measures, which was identified as an area in need of improvement as per the results of the Sigma T Maths test taken on a school-wide scale.

Consensus was sought in the following areas:

- The use of appropriate mathematical language, its progressive introduction and consistent reinforcement and development throughout the school from junior infants to 6th class.
- Default strategies for the teaching of key mathematical operations and concepts.
- The teaching of tables.
- The importance of active learning in mathematics and the use of concrete materials to reinforce mathematical concepts.
- The importance of relating maths to everyday life and to highlight its relevance outside of the school environment.
- An emphasis on maths as a means of problem solving and the teaching of mathematical operations and mathematical concepts both for problem solving and through problem solving.
- The need to promote the Measures strand through increased active learning and reinforcement through the other strands.
- The need for a reliable uniform system of assessment throughout the school to assess each individual pupil's progress in relation to each of the strand areas in Maths.
- The need to collate the results of the annual Sigma-T Maths Test and to represent the data in a clear useable format so that the information gained can be put to use in:

    - Monitoring how effectively the school Maths policy is being implemented
    - Identifying problems and areas for improvement
    - Assessing the performance of pupils in the various strand areas as individuals, as a class group and as a school
    - Informing planning by individual class teachers and learning support teachers
    - Identifying pupils in need of learning support in Maths
    - The need for a new Maths scheme to replace the existing Action Maths Programme

It was in light of these findings that 2005 Mathematics Policy was revised. The 2013/2014 Mathematics Policy is a record of whole school decisions in relation to Mathematics in line with the Primary Curriculum, 1999, and it is intended to inform teachers in their individual planning for Mathematics and in the teaching strategies and methodologies they employ in the teaching of Mathematics.

Aims

We endorse the aims of the primary school curriculum for mathematics which 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 everyday life
- To enable the child to use mathematics language effectively and accurately
- To enable the child to acquire proficiency in fundamental mathematical skills and in recalling basic number facts
- To enable child to acquire an understanding of mathematical concepts and processes to his/her appropriate level of development and ability.

Content of Mathematics Plan 2013/2014

Maths Curriculum: Strands and Strand Units

Teachers should familiarise themselves with the strands as outlined in the **Primary Curriculum 1999** and refer to them regularly when planning to ensure that each strand and both strand units are given equal prominence during the Maths Programme for the year.

Infant Classes

Strands	**Strand Units**
Early Mathematical Activities	Classifying Matching Comparing Ordering
Number	Counting Comparing and ordering Analysis of number *Combining* *Partitioning* *Numeration*
Algebra	Extending Patterns
Shape and Space	Spatial Awareness 3D Shapes 2D Shapes
Measures	Length Weight Capacity Time Money
Data	Recognising and interpreting data.

1st and 2nd Classes

Strands	Strand Units
Number	Counting and Numeration Comparing and Ordering Place Value Operations: addition, subtraction Fractions
Algebra	Extending and Using Patterns
Shape and Space	Spatial Awareness 3D Shapes 2D Shapes Symmetry Angles
Measures	Length Area Weight Capacity Time Money
Data	Recognising and interpreting data

3rd and 4th Classes

Strands	Strand Units
Number	Place Value Operations: addition, subtraction, multiplication, division Fractions Decimals
Algebra	Number Patterns and sequences Number Sequences
Shape and Space	3D Shapes 2D Shapes Symmetry Lines and Angles
Measures	Length Area Weight Capacity Time Money
Data	Recognising and interpreting data Chance

5th and 6th Classes

Strands	Strand Units
Number	Place Value Operations Fractions Decimals and Percentages Number Theory
Algebra	Directed Numbers Rules and Properties Variables Equations
Shape and Space	3D Shapes 2D Shapes Lines and Angles
Measures	Length Area Weight Capacity Time Money
Data	Representing and interpreting data Chance

Resources

We acknowledge the importance of concrete materials in the development of mathematical concepts for children in all classes.

In the first term 0f the 2012/2013 school year, an inventory of the Mathematical equipment within the school was drawn up by Ms. Gillespie, who then consulted teachers to identify what Mathematical equipment might be added to the existing inventory, so as to equip each class with a comprehensive and suitable range of Mathematical resources. Ms. Gillespie purchased the necessary resources and thus, each class was supplied with Maths equipment suitable for that class level. The class teacher assumes responsibility for checking and maintaining these resources and for notifying Ms. Gillespie of any items in need of repair or replacement.

- All Mathematical equipment remains the property of Scoil Mhuire and must remain on the premises at all times.
- Teachers may borrow equipment from other classes but should ensure that it is returned promptly and in good condition.
- Items such as calculators, protractors and compasses are stored centrally in the Cófra Matamaitice in the Seomra Fóirne.

Textbooks

Textbooks are in line with the content objectives for each class level. Textbooks reinforce the concept taught and give adequate practice in each activity.
The scheme currently in use in Scoil Mhuire is Action Maths, published by Folens. This scheme is to be replaced at the end of the 2013/14 school year by the Planet Maths scheme, published by Folens.

Teachers may, if they wish, opt to designate one other Maths textbook as a supplement to the core Maths Scheme.

Textbooks currently in use in Scoil Mhuire

Class/Teacher	Core Textbook	Supplementary Textbook
Naíonáin Bheaga	Action Maths Junior Infants Folens	
Naíonáin Mhóra	Action Maths Senior Infants Folens	
Rang a hAon	Action Maths 1 Folens	Figure it Out 1 C.J. Fallon
Rang a Dó	Action Maths 2 Folens	Figure it Out 2 C.J. Fallon
Rang a Trí	Action Maths 3 Folens	Figure it Out 3 C.J. Fallon
Rang a Ceathair	Action Maths 4 Folens	Figure it Out 4 C.J. Fallon
Rang a Cúig	Action Maths 5 Folens	Figure it Out 5 C.J. Fallon
Rang a Sé	Action Maths 6 Folens	Figure it Out 6 C.J. Fallon

Approaches and Methodologies

The following approaches and methodologies may be use used throughout the year:

- **The Use of Concrete Materials**
  - Children will have access to and use a comprehensive range of mathematical equipment during lessons.
- **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.
- **Collaborative and Co-operative learning**
  - Collaborative and Co-operative learning in classes from Naíonáin Bheaga to Rang a Sé is promoted using the following strategies:
  - Encouraging the children to listen.
  - Encouraging the children to take turns.
  - Seeing that others opinions are important
  - Children working in pairs while playing mathematical games.
  - Children working in small groups while engaging in problem solving activities.

Teachers use a variety of organisational styles to encourage co-operative and collaborative learning: pairwork, group work and whole class work

I.C.T.

We acknowledge the importance of ICT as a valuable resource in the teaching and learning of Mathematics when used by the teacher as a teaching tool and by the learner as an engaging and enjoyable way to practice skills and reinforce concepts.
Each classroom in Scoil Mhuire was equipped with an interactive whiteboard in the final term of the 2011/2012 school year, providing teachers with a powerful tool in the teaching and learning of Mathematics.
Teachers are encouraged to make use of Mathematical software and of the many online Mathematical resources during the Maths lesson.

Each classroom in Scoil Mhuire is equipped with at least one laptop or desktop computer to which the pupils have access. Teachers are encouraged to provide pupils with access to suitable Mathematical software for the purposes of practising skills and reinforcing concepts learned in the Maths lesson.

Each of the Naíonáin Bheaga and Naíonáin Mhóra classes has been equipped with an iPad 4 64GB and Apple TV linked in to the interactive whiteboard. Teachers are encouraged to take advantage of the many excellent Mathematical apps in enriching the Maths lesson and making the learning of Mathematical skills and concepts an enjoyable and engaging experience for the pupils.

The Múinteoir Tacaíocht Foghlama Matamaitice and each of the Múinteoirí Achmhainne have been equipped with an iPad 4 64GB. They utilise a range of Mathematical apps in assisting the pupils in the teaching of Mathematical skills and concepts.

Calculators

From fourth class upwards children are permitted to use calculators alongside traditional paper and pencil methods. Calculators are particularly useful for handling larger numbers, to check answers, to explore the number system, to remove computational barriers for weaker children. They also allow the child to focus on the structure of the problem solving questions. It is important that the skill of estimation is developed along with the use of the calculator.

Using the environment/community as a learning resource

The school building, its immediate environment and the wider local community are used as a resource to support the Maths programme. Teachers use the school building and its immediate environment to provide opportunities for the teaching of concepts such as:

- Shape and Space
    - 2D Shapes: *Rectangular doors and windows, circular hoops and yard markings*
    - Lines and Angles: *Right angles and perpendicular lines in corners etc.*
- Measures
    - Length: *Measuring the length of various features of the yard/school building*
    - Area and Perimeter: *Measuring area and perimeter of the yard*
    - Mathematical problem solving e.g. numbers on doors, using hula hoops to sort children in P.E. games on the playground, count trees in the playground, count windows, observe shapes of windows, doors etc.,

Mathematical Trails are used outdoors to help teach mathematical concepts to children and make them aware of mathematics in their environment. Children display their mathematical work in their classrooms.

Numbers

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

Data

Children are encouraged to collect real data, i.e. infant classes collect personal information and represent it on a pictogram e.g. older children create and interpret bar charts and pie charts. Children are made aware of the importance of entering relevant data and asking clear questions to extract the required information from their 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 correct use of symbol names. This language has been agreed at whole school level in order to ensure consistency from one class to the next and also to help avoid confusion for children having difficulties with Mathematics. Our agreed strategies /language are as follows:

Naíonáin Bheaga	
No signs used	
Addition	**Language in use** and, make, add, plus, is the same as, altogether makes.

Naíonáin Mhóra	
Introduction of signs: + =	
Addition	**Language in use** and, make, add, plus, is the same as, altogether makes **plus, equals.**
2 +1 3	Top down: 2 plus 1 equals 3 2 + 1 equals 3 2 + 1 = 3

Rang a hAon	
Continuation of signs: + =	
Addition **Subtraction**	**Language in use** and, make, add, plus, is the same as, altogether makes, plus, equals, **take away, less than, left over, minus.**
16 -4 12	Vertical: start from the top using the words **take away/minus** 16 take away 4 equals12 16 – 4 = 12
5 – 1 = 4	Horizontal: Read from left to right using the words **take away** 5 **take away** 1 equals 4
Place Value	The word **units** will be used rather than *ones* Renaming/grouping will be the method used throughout the school.

Rang a Dó	
Continuation of signs: + =	
Addition **Subtraction**	**Language in use** plus, equals subtraction, decrease, subtract, take away, from, less than, minus, difference
Addition 7+3+8=18	7 plus 3 plus 8 equals 18 (7 plus 3 equals 10 plus 8 equals 18)
Addition 29 +16 45	9 units plus 6 units equals 15 units. 15 units equals 1 ten and 5 units. Put down 5 in the units place. Carry 1 ten to the tens place. (write 1 ten ***on the line***) 2 tens plus 1 ten plus 1 ten (carried) equals 4 tens. Put 4 down in the tens place.
Subtraction with Renaming 27 -18 / 27 -18 9	Seven take away eight, I cannot do. I go to the tens, cross out my tens and bring one over to the units to become ten units. I have one ten left and now I have 17 units 17 take away 8 equals nine 1 ten take away 1 ten equals 0 tens My answer is 9 units

Rang a Trí agus Rang a Ceathair		
Introduction of signs: × ÷		
Multiplication **Division**	**Language in use** multiplication, multiply, times, product, groups of, repeated addition, sets of divide, divided by, split, shared between, group, how many in, repeated subtraction, sets of	
Short Multiplication 3	3 times 4 equals 12. 12 equals 1 ten and 2 units. Put down 2 in the units place and 1 in the	4 groups of three 4 threes 4 sets of 3

<table>
<tr><td>× 4
12</td><td>tens place.</td><td>4 times 3
The product of 3 and 4 is 12
4 multiplied by 3 is equal to 12</td></tr>
<tr><td>Long Multiplication
29
×65
145
1740
1885</td><td colspan="2">9 times 5 equals 45 units.
Put down 5 in the units place and carry 4 to the tens place. (write 4 tens <u>on the line</u>)
5 times 2 equals 10 tens. Carry 1 to the hundreds place. (write 1 hundred <u>on the line</u>)
145
Move to next line and place 0 in the units column.
6 times 9 equals 54. Put down 4 in the tens place and carry 5 to the hundreds place. (write 5 hundreds <u>under the line</u>)
6 times 2 equals 12. Add the carried 5 hundreds. This equals 17 hundreds. Put down 7 in the hundreds place and carry 1 to the thousands place. (write 1 thousand <u>under the line</u>)
1740
145 plus 1740 equals 1885.</td></tr>
<tr><td>Multiply by 10
Multiply by 100</td><td colspan="2">Add a zero. Move numbers over decimal point one place left.
Add 2 zeroes. Move numbers over decimal point two places left.</td></tr>
<tr><td rowspan="2">Division
12 ÷ 4 = 3</td><td colspan="2">Divisible by, not divisible by, share between, left over, remainder</td></tr>
<tr><td colspan="2">12 shared among 4
How many 4s in 12
12 divided by 4</td></tr>
<tr><td>Divide by 10</td><td colspan="2">Take away a zero. Move numbers over decimal point one place right.
Take away two zeroes. Move numbers over decimal point two places right.</td></tr>
<tr><td rowspan="2">Fractions
1/3 of 18 = 6</td><td colspan="2">halves, thirds, quarters, fifths, sixths, eights, ninths tenths, twelfths.</td></tr>
<tr><td colspan="2">Share 18 among 3
18 split into 3 groups
18 divided by 3</td></tr>
<tr><td>Equivalent fractions</td><td colspan="2">1/2 is equivalent to 2/4
1/2 is the same as 2/4
1/2 is equal to 2/4</td></tr>
<tr><td rowspan="3">Decimals</td><td colspan="2">Decimal point to be given its own square in the Maths copy.</td></tr>
<tr><td colspan="2">Include zero before decimal point. point, decimal.
tenths, hundredths</td></tr>
<tr><td colspan="2">1/10 is equal to 0.1
1/100 is equal to 0.01</td></tr>
<tr><td>Tessellation</td><td colspan="2">Shapes fit together with no spaces</td></tr>
<tr><td>Time

Addition
Hrs | Mins
3 45
+ 2 30
5 75
(+ 1) (-60)
6 15</td><td colspan="2">Addition and Subtraction of Hours and Minutes.

Add Hours and Minutes separately.
Rename Minutes to Hours and add to the Hours Column. Write remaining Minutes in the Minutes Column.</td></tr>
</table>

Subtraction

Hrs	Mins
3	15
- 1	30

Check Minutes Column to see if renaming is necessary.

Hrs	Mins
3	15
(- 1)	(+60)
2	75
- 1	30
1	45

Subtract an Hour from the Hours Column, rename it to Minutes and add to the Minutes column.

Subtract Hours and Minutes separately.

Rang a Cúig agus a Sé	
Number	square, prime, composite, rectangular numbers, triangular numbers Finding common multiples by listing numbers and by use of factor trees Finding common factors by listing factors and by use of factor trees The word **quotient** is introduced in Rang a Sé. Problem solving involving sum, difference, products, quotients
Fractions	All children are taught to memorise equivalent fractions, decimals and percentages. Numerator, denominator, common denominator.
Addition of Fractions 1/2 + 1/4 = 2/4 +1/4= 3/4	Establish a common denominator. Rename ½ to 2/4
Improper Fractions and Mixed Numbers 1 3/4 = 7/4	Top heavy fractions Rename 1 ¾ to quarters.
Multiplication of Fractions 2/3 ×3/4 = 2 × 3 = 6 3 × 4 = 12 6/12 = 1/2	 Multiply numerator by numerator Multiply denominator by denominator Simplify

Multiplication of Mixed Numbers **3** 3/4 × **2** 2/3 15/4 × 8/3 5/1 × 2/1 10/1 = **10**	Convert mixed numbers to improper fractions. Use the cross out method to simplify. Multiply numerator by numerator and denominator. Simplify.
Division of Whole Number by a Fraction **5** ÷ 1/4 = 20 5/1 ÷ 1/4 = 5/1 × 4/1 = 20/1 = 20	Express in terms of **How many quarters in 20**? Write 5 units as 5 over 1. Change 1 over 4 to 4 over 1. Multiply numerator by numerator and denominator by denominator. Simplify.
Division of Fractions 2/3 ÷ 5/6 = 2/1 × 6/5 = 2/1 × 2/5 = 4/5	Change 5 over 6 to 6 over 5. (turn divisor upside down) Change division to multiplication. Use the cross out method to simplify. Multiply numerator by numerator and denominator by denominator. Simplify.
Division of Mixed Numbers **4** 1/5 ÷ 1 3/4 = 21/5 ÷ 7/4 21/5 × 4/7 3/5 × 4/1 12/5 = **2** 2/5	Rename 4 and 1 fifth to 12 fifths and rename 1 and 3 quarters to 7 quarters (rename mixed numbers to improper fractions) Change 7 over 4 to 4 over 7. (turn divisor upside down) Change division to multiplication. Use the cross out method to simplify. Multiply numerator by numerator and denominator by denominator. Simplify

Decimals	1/10, 1/100, 1/1000 - tenths, hundredths, thousandths 0.1, 0.01, 0.001
Addition and Subtraction of Decimals 7.75 -5.25 2.50	To 3 decimal places (with/without calculator) **Ensure that the digits are in the correct column**, Units in the Units Column, Tenths in the Tenths Column and that the decimal points are **positioned directly beneath each other**.
Rounding of Decimals	To the nearest whole number, to 1 decimal place, to 2 decimal places
Multiplication of Decimals 2.2 × 1.75 2.2 → 2 and 1.75 → 2 2 × 2 = 4 (estimate) 1.75 × 2.2 350 3500 3.850	Round numbers to nearest whole number or to nearest simple fraction and multiply to **estimate** **Structure sum in most convenient way**, i.e. 1.75 times 2.2 rather than 2.2 times 1.75. **Ensure that the digits are in the correct column**, Units in the Units Column, Tenths in the Tenths Column and that the decimal points are **positioned directly beneath each other**. Count the numbers behind the decimal points in the sum and make sure that there is the same number of numbers behind the decimal point in the answer. **Compare the answer to the estimate.**
Division of Decimals 43.56 ÷ 1.8 1.8 | 43.56 multiply divisor and quotient by 10 18 | 435.6 024.2 18 | 435.6	 Convert the divisor to a whole number by multiplying by 10. Also multiply the quotient by 10 to maintain equivalence. Ensure that decimal points are lined up correctly.
Converting a Fraction to a Decimal 1/8 = 1 ÷ 8 = 0.125 0.125 8 | 1.000	 Divide the numerator by the denominator

<table>
<tr><td>$\frac{3}{25} = \frac{12}{100} = 0.12$</td><td>Rename the fraction to hundredths.</td></tr>
<tr><td>Indices</td><td>To the power of 2 : squared
To the power of 4: cubed</td></tr>
<tr><td>Ratio

2 : 3

25 : 40 = 5 : 8</td><td>Relate to Fractions

2 parts to 3 parts. 5 parts in total. 2 fifths to 3 fifths.

Simplify ratios to their lowest terms</td></tr>
<tr><td>Converting Fractions to Percentages

$\frac{1}{8} = 1 \div 8 = 0.125$

0.125
8 | 1.000

$0.125 \times 100 = 12.5\%$

$\frac{1}{8} \times \frac{100}{1} = \frac{100}{8} = \mathbf{12}\ \frac{4}{8} = \mathbf{12}\ \frac{1}{2}$</td><td>Convert the Fraction to a Decimal

Divide the numerator by the denominator

Multiply the Decimal by 100.</td></tr>
<tr><td>Time</td><td>Multiplication and Division of Hours and Minutes</td></tr>
<tr><td>Multiplication
<table><tr><th>Hrs</th><th>Mins</th></tr><tr><td>3</td><td>25</td></tr><tr><td>×</td><td>5</td></tr><tr><td>15</td><td>125</td></tr><tr><td>(+ 2)</td><td>(-120)</td></tr><tr><td>17</td><td>5</td></tr></table>
Division
<table><tr><td>5</td><td>7 hrs</td><td>30 mins</td></tr><tr><td>5</td><td colspan="2">7hrs =
1 and 120 mins</td></tr><tr><td></td><td colspan="2">30 mins(+120)
150 mins</td></tr><tr><td>5</td><td colspan="2">150mins =
30</td></tr></table></td><td>Multiply Hours and Minutes separately.
Rename Minutes to Hours and add to the Hours Column. Write remaining Minutes in the Minutes Column.

Divide Hours and Minutes separately.
7 Hours divided by 5 equals 1 and 120 minutes remaining.

Add remaining minutes to Minutes Column

150 Minutes divided by 5 equals 30 minutes

Answer : 1 Hour 30 Minutes</td></tr>
<tr><td>Coordinates</td><td>Concept of horizontal X Axis and vertical Y Axis introduced. Alphabetical order of X and Y used as a reminder of the order in which coordinates are plotted.</td></tr>
<tr><td>Area and Perimeter</td><td>Area and Perimeter of Regular and Irregular shapes.
Length, Width, Breadth, boundary, circumference, radius, diameter, cord, tangent.</td></tr>
</table>

	Square Centimetres, Square Metres, Square Kilometres, Ares, Hectares. **Area of Square, Rectangle** found by multiplying **Length by Width**. **L × W = A** **Area of Triangle** found by finding **½ the area of the rectangle** of which it makes up half. $\frac{\mathbf{L \times W}}{\mathbf{2}} = \mathbf{A}$ Later, **Area of Triangle** found by finding **half of the product of Base and Perpendicular Height** $\frac{\mathbf{B \times H}}{\mathbf{2}} = \mathbf{A}$ **Area of Irregular** shapes found by splitting them into regular shapes, finding the respective area of these and combining them. **Perimeter of Circle** explained in terms of perimeter of Circle being **3.14 times the Diameter**. Concept of π introduced in Rang a Sé. **D × π = C** **Area of Circle** explained in terms of being **3.14 times greater than the area of a square of which the radius of the circle is a side.** **(R × R) × π = A**
Lines and Angles	Right angle, acute, obtuse, reflex, straight, degrees, protractor, ruler Sum of angles in a triangle = 180 Sum of angles in a quadrilateral = 360 Sum of angles in a circle = 360 Construction of and Measurement of a variety of angles.
2D Shapes	Identification of Regular Polygons: Pentagon, Hexagon, Octagon etc. Construction of Regular Polygons using ruler, protractor.. Study of the internal and External angles of Regular Polygons.
3D Shapes	Identification of 3D Shapes: Cube, Cuboid, Prisms, Tetrahedron etc. Identification of the Regular 2D Shapes comprising the surface area of 3D Shapes e.g. Cylinder: Rectangle, Circle. Construction of nets of 3D Shapes Study of the Edges, Vertices of 3D Shapes.

Tables

Number facts up to 12 will be memorised.
Addition and subtraction facts up to 12 will be taught by the end of Rang a Dó.
Multiplication facts are taught by the end of Rang a Trí.
Division facts are taught by the end of Rang a Trí.
Tables will be revised up to the end of Rang a Sé.
Thus tables are recited throughout the school as follows:

4 x 3 = 12 (four threes are twelve), which can progress to four threes twelve, which can progress to ceathar fá trí sin a dó dhéag.

A variety of methods will be used including counting 2's, 3's, 4's…., reciting, using rhymes, songs etc. Subtraction and division tables will be learned as the inverse of addition and multiplication.

Children from Rang a Dó to Rang a Sé recite their tables regularly and tables are reinforced regularly. Children are encouraged to memorise tables and tables are given as homework. Class teachers identify children having difficulties with tables and with them set realistic targets ensuring steady progression. These children will be assessed on tables regularly.

Skills

The following skills will be taught to the children through the study of the various strands in the Curriculum:

- Applying Problem Solving
- Communicating and Expressing
- Integrating and Connecting
- Reasoning
- Implementing
- Understanding and Recalling
- Estimation

Integration

Every strand must provide opportunities for acquiring skills. Opportunities should also be provided for the transfer of these skills to other subject areas. Maths is a living subject with endless possibilities for integration such as in Science e.g. measuring temperature. We believe that the integration of Mathematics with other subjects is an important factor in broadening the child's education. Elements of number, time and measure – length can be applied to activities in Physical Education. Work in Mathematics is needed when conducting surveys and representing data for the Green Flag School Project. Artwork is a very effective way of consolidating learning in shape – e.g. tessellations. A thematic approach to Mathematics brings cross-curricular activities into play – e.g. in SESE, SPHE, Language, Physical Education, Arts Education.

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 some or all of the following strategies:
Understanding the problem

- Read the problem
- Re-read the problem
- Say, in your own words, what you are trying to find out
- Find the important information
- Look for key phrases
- Write what you know
- Estimate an answer

Rude
Children from Rang a Trí to Rang a Sém are encouraged to use the following abbreviated model for solving a Math's problem: **R**ead, **U**nderline the key words, **D**raw a diagram of the problem, **E**stimate your answer and then attempt to solve the problem. All children should be exposed to this model regularly and be very familiar with it by the time they reach 6th Class.

Solving the problem

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

Additional help

- Draw a picture
- Make an organised list of table
- Use objects to act out the problem
- Use easier numbers
- Work backwards

Answering the problem

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

Estimation
Estimation is a central part of the 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

<u>Presentation of work</u>
In all classes Maths work is presented using a number of formats namely:

- Oral Presentation
- Teacher designed work sheets bases on strand unit being taught (these will be dated by the class teacher.
- Work in Class maths book which is an activity book
- Recording work
- Using concrete materials to draw a picture, pictogram
- Number stories, Number rhymes (Junior Classes)
- Birthday Chart / graph of favourite fruit / colour etc.

A pencil only is used for writing numbers, and problems in Maths up until the end of Rang a Sé in Scoil Mhuire. Children are allowed to use erasers. A red biro is introduced in 4th Class for ruling and correction purposes only.

Maths copies are to be ruled with a **single, vertical, central, red line** running the length of the page.
The **Day, Date, Book Title** (abbreviation), and **Page Number** are to be written in pencil before starting work.
The **Number** of each question/problem/exercise is to be clearly indicated in the top, left hand corner.
The **Answer**, if applicable, is to be clearly indicated i.e. **Frg =**

Assessment and Record Keeping
Planet Maths Assessment tests to be done and recorded on the completion of each Mathematical Strand.
Sigma T Maths Test in November in First to Sixth Classes.
Drumcondra Standardised Maths test is done in May in **Rang a Dó** , **Rang a Cúig** and **Rang a Sé**.

The following are other assessment tools used by teachers

- Teacher's observation.
- Work Sheets and work in copies
- Standardised Tests: Sigma T and Drumcondra
- Extension and enrichment activities based on the strand unit being taught.
- Ongoing teacher-designed tests. Children will bring the tests and the results of such tests home for signing. Test results are kept by the class teacher and passed on to the next teacher.
- Oral tests (tables, continuation of number patterns)
- Problem solving exercises that use a variety of mathematical skills.

Following assessment, teachers may do the following:

- Give extra help to individuals who need it
- Decide to increase time spent using concrete materials
- Discuss the situation with forwarding teacher at the end of the school year and beginning of new school year
- Discuss concerns with parents and encourage parents to help children informally e.g. Give me 3 spoons. Help me set the table. How many doors etc.,
- Consult with the Special Needs team who will provide the support when needed using available resources within the school.

Children and Different Needs
The Maths programme aims to meet the needs of all children in the school. This will be achieved by teachers varying pace, content and methodologies to ensure learning for all children.
Teachers are cautious not to label children as having difficulties in Mathematics especially in Junior and Senior Infants. Records are stored in line with the school policy on Record keeping.

Equality of Participation and Access
The school plan for Mathematics is designed to allow all children full access to all aspects of the Mathematics Curriculum. Equal opportunity is given to boys and girls to access all parts of the curriculum. Pupils whose first language is not English are given extra help within the school. Children with special physical needs catered for to the fullest possible extent.

Learning Support in Mathematics
Those children who receive scores **at or below the 10^{th} percentile** on the standardised tests will have priority in attending the Learning Support Teacher for supplementary teaching in Maths. This does not preclude children whose scores on the standardised tests are higher than the 10^{th} percentile from receiving supplementary teaching in Maths if there are places available.

The availability of supplementary teaching for Maths depends on the caseload of the Learning Support Teacher. Arrangement will be in accordance with the recommended selection criteria as determined by the DES.
Scoil Mhuire has a **policy of early intervention in terms of Learning Support in Maths**. The majority of pupils who receive supplementary teaching from the Learning Support Teacher will be in the Junior Section of the school (Naí Mhóra to Rang a Dó). Thus, **priority in attending the Learning Support teacher for supplementary teaching for Maths will be on the basis of Juniority**. Generally, only those pupils in the senior section who have very low achievement and/or serious learning difficulties should receive supplementary teaching. However, once the needs of pupils who have very low achievement and/or serious learning difficulties have been met, a limited degree of flexibility may be exercised in providing supplementary teaching to pupils in the senior section who have significantly lower than average scores on the standardised tests.

These recommendations are consistent with the concept of a sliding scale of achievement test scores as suggested in the 1987 Guidelines on Remedial Education.

Children with exceptional ability in Maths will be given extra work in class based on the concept being taught in class. ICT allows children to work at their own level and challenges children of all abilities.

Groupwork
Teachers may group the children in the class in a number of ways:
Whole class teaching, mixed ability groups, similar ability groups, peer teaching groups, problem solving groups

Time-table
In line with Circular Letter 0056/2011 teachers will timetable 4hrs10min for Mathematics in First to Sixth Classes and 3hrs 25min in the Infant Classes.

Homework
Homework in Mathematics is given in line with the school homework policy.

Parental involvement
Parents are encouraged to support the school's programme for maths. Part of the function of the Parent/Teacher Meetings is to inform parents of the Maths programme for the year. Particular attention is be drawn to:

- The importance of trial and error, estimation, the use of concrete materials and the role of calculators.
- The school approach to e.g. subtraction, division, calculation using fractions.
- The fact that Maths homework may be used on practical activities.
- The use of the homework Journals as a vehicle for two-way communication between teacher and parent on progress in Mathematics or 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 year.

Success Criteria
The success of this plan will be measured using the following criteria:
On-going assessment, formal and informal, will show that pupils are acquiring an understanding of mathematical concepts and a proficiency in Maths skills appropriate to their age and ability.

Implementation of the school plan will be evident in teachers' preparation and monthly reports.
Teachers will know from their new classes in September that work/approaches as outlined in the plan have been covered by the previous teacher.

Implementation, Review and Ratification
This revised Mathematics Policy was ratified by the Board of Management in April 2014. The plan will be communicated to teachers and implemented in classes from September 2014.
Class teachers are responsible for the implementation of the Maths programme for their own classes.
Progress during the school year will be part of the School Self-Assessment process and will be based on results of assessments across all classes and on teachers.

This Mathematics Policy will be reviewed at the end of the 2014/2015 school year.