

Mathematics Curriculum Policy

Introductory Statement

This plan was formulated as the outcome of the following consultative processes:

- Class teacher meetings
- Consultations with the learning support teachers
- Consultation with PA
- Rationale

The plan was formulated for the following purposes:

- To enhance the teaching and learning of mathematics in the school
- To ensure conformity with the Primary School Curriculum
- To review existing practice
- To standardise school practice and to facilitate continuity and inclusion
- To include the update of the literacy and numeracy strategy 2011

Vision Statement

Our 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.

This plan aims to ensure that all children reach their individual potential in maths. It aims to ensure that each child leaving the school in 6th class will be able to think logically, solve day-to-day problems and recall basic number facts. It aims to ensure that each child have the mathematical skills to live a full life as a child and later as an adult.

1. Aims

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

The Strands and Strand Units

Every teacher will develop a scheme of work for their class based on the objectives outlined in the Revised Curriculum.

3rd and 4th Class p.63-83 Curriculum

5th and 6th Class p.88-111 Curriculum

Mathematics

The Strands are:

- Early mathematical Activities (Infants)
- Number
- Algebra
- Shape and Space
- Measures
- Data

2. Approaches and Methodologies

The following approaches and methodologies will be used throughout the year

2.1 Concrete Materials/Manipulatives

A hands-on approach is essential if children are to understand mathematical concepts. They will need a wide variety of materials when exploring tasks. This is important right through to sixth class and will require access to a considerable amount of equipment. Available equipment will be listed later (Appendix 1). The use of concrete equipment will be necessary in all strands. Working with equipment can be done individually, in pairs or in groups, depending on the task. A maths table is available in each room where children can freely use concrete material to help their learning. Mathematical games are used formally and informally to support and consolidate learning i.e. matching, multiplication facts.

2.2 Talk and Discussion

Talk and discussion is seen as an integral part of the learning process. Opportunities will be provided during the maths class for children to explain how they got the answer to a problem and discuss alternative approaches to solving it with the teacher, with other individual children and in groups.

2.3 Textbooks and workbooks

The Planet Maths programme by Folens is in use throughout the school. This programme covers all strand units in each class. Teachers do not rely totally on the textbook and use active learning also. The teacher's manual, work cards and other texts are available at the teacher's discretion for use with children who need more challenging exercises and also for children who need extra reinforcement. Text books used are under ongoing review and may be changed with the general consensus of the staff.

2.4 Estimation

Estimation must be seen as a strategy to be used throughout all the strands and not merely restricted to number alone. These skills must be developed and refined so that the guesses can

become more realistic and more accurate. Children should be encouraged to use the following strategies selecting which is most appropriate for the task at hand:

- Front end
- Clustering
- Rounding
- Special Numbers

These are explained in the teacher Guidelines pages 32-34

In strands such as measure and shape and space, the hands-on approach is vital if children are to develop an understanding of quantities such as litres, metres, etc. It is important to teach the children to develop their own personal benchmarks to be used when estimating, particularly in the measures strand e.g. the width of their finger is close to a centimetre.

2.5 Calculators

Calculators are in use from fourth to sixth classes. Calculators must be stand alone i.e. not incorporated into a ruler and the keys must be a reasonable size. Children must be taught to make decisions about when it is appropriate to use them such as checking answers or for particularly large numbers. Calculators must not replace competent computational skills. The children will learn that estimation and calculators work hand in hand. Pupils with specific learning difficulties may be given access to calculators when judged to be beneficial after consultation between the special needs teacher and the classroom teacher.

2.6 Using the Environment

Each teacher will be responsible for creating a maths rich environment in his/her classroom. The maths equipment will be easily displayed where appropriate.

Classroom doors are numbered and heights and distances marked in the corridor.

Class teachers can have “Puzzle of the week” at their discretion and when appropriate.

The use of maths trails is encouraged. A maths trail is an organised walk through an area close to school where pupils can experience maths in the real world. It will help to highlight for them the use we make of number in our everyday life and how maths surrounds us. Maths trails provide an ideal opportunity for differentiation, as all pupils can be participating in the activity answering questions at their own level. Trails will always be mindful of the Health and Safety Policy

2.7 Language

Mathematics has its own vocabulary and grammar. It must be spoken before being read and read before written down. It is important that there is an agreed strategy for teaching concepts. Consistency in the language used from class to class is important. The vocabulary and the language used in our teaching in mathematics will be guided by Planet Maths topic by topic. We have agreed the following:

Addition

Junior Infants:

3 and 1 make 4: No Symbols: Say “three and one make four”

0 is referred to as zero.

Senior Infants:

$2+4=6$ with symbols. Say “two plus four equals six”

First class:

Add two or three numbers within 99.

Start with the Bottom number e.g.

$$\begin{array}{r} 45 \\ +19 \\ \hline \end{array}$$

Say “9 plus 5 is fourteen. Put down 4 and carry one”

Subtraction

Second Class:

Start at the bottom (ease transition when moving into multiplication)

e.g. 48

-21

27

Say “1 from 8 is 7”

Borrowing and Regrouping

e.g. 34

-18

Say “8 from 4 I cannot do so if there is more on the floor go next door and bring over one ten”. “Now I have two tens and 14 units”. 8 from 14 is 6.

Multiplication and Division

Symbols are introduced in third class.

School Strategy to Improve Times Tables

Five minutes dedicated to rote learning of Times Tables each day; one table per week.

2.8 Problem Solving

The ability to solve problems is at the heart of maths. It makes the learning of maths more interesting and enjoyable. It allows them to use the mathematical skills and knowledge they have already acquired. Problems can come in many different forms i.e. word problems, practical tasks, open ended investigations, puzzles and games. Mad for maths is the program used from 1st to 6th.

Team teaching in Senior Classes. 40mins – 1 hour per week is given to the teaching of problem solving.

Children need to be taught strategies to problem solve. The following are three strategies that may be used:

1. The ROSE Approach

- 1) Read the problem. Paraphrase the problem. Try substituting simpler numbers for larger numbers or fractions or decimals. This makes estimating easier
- 2) Organise the mathematical operations you will use
- 3) Solve the problem
- 4) Evaluate your answer. Was it the best method? Does it match the estimate?

2. RAVECCC

- 1) Read the problem carefully
- 2) Attend to the key words
- 3) Visualise the problem
- 4) Estimate the answer
- 5) Choose the numbers to use
- 6) Calculate the result
- 7) Compare the answer to the estimate

Problem solving RAVECCC Bookmarks can be used. (Appendix 4)

3. The RUDE Approach

- 1) Read the problem
- 2) Underline key words

- 3) Draw a picture or diagram
- 4) Estimate the answer

2.9 Presentation of Work

Recording of maths work in infants is done in 2 centimetre squared copy

From 2nd Class upwards, 1cm squared copies are used unless particular difficulties arise.

In senior classes the presentation of written work in mathematics is as follows:

Each page is to be divided into two categories/columns. An additional extra column could be added for rough work where necessary. The order of writing sums is to be written vertically down the page as opposed to horizontally.

A variety of options for presentation will be availed of where appropriate at teacher's discretion for example, drawing pictures to show result, concrete materials, diagram, verbally, etc.

2.10 Collaborative and Co-Operative Learning

The maths curriculum allows opportunities for the children to work in pairs/small groups. It provides opportunities to learn the skills needed for turn taking, listening to others and taking responsibility for particular tasks within a group e.g. measurement.

Maths games are used from first class upwards under the "Maths for Fun" Programme.

2.11 Integration

Maths is a living subject with endless possibilities for integration such as in art and 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 for the Green Flag.

School Projects: 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.

3. Assessment and Record Keeping

Assessment is an essential element of the school plan for mathematics. It is used to monitor pupil progress and to inform future planning. The following assessment tools are in use:

- Teacher observation provides ongoing assessment of oral and written class work and homework. The children's work in their copies and folders is a record of his/her progress.

- Teacher designed tests and tasks
- We use the Sigma-T standardised test to assess maths within the school from 1st to 6th at the beginning of every school year. A copy is given to the Learning Support teacher and is kept on file.
- The Planet Maths teacher's manuals contain end of term tests, which focus on the work covered over the previous term.
- Exit Cards are used at the end of each strand unit. This gives the children an opportunity to self assess their learning of each topic and allows the teacher a further opportunity to evaluate.

4. Children with Different Needs

- a. Class teachers use the following strategies to ensure the participation of children with special needs in relation to mathematics:
 - Use of concrete materials
 - Oral explanation and discussion to ensure pupils with literacy difficulties can participate in the maths class
 - Direct teaching, demonstration and explanation by the class teacher
 - Teaching of the language of mathematics
 - Discussion between the teacher and pupils
 - Group activities
 - Opportunities to practice and consolidate fundamental skills and routines using oral as well as written examples
- b. Children with special needs are provided with access to all strands of the mathematics curriculum.
- c. Teachers in mainstream classrooms provide a differentiated programme to cater for children with learning difficulties.
- d. Supplementary teaching in mathematics is available for children with learning difficulties. Where children have a score of 30 percentile or less in the Sigma T, then one to one assistance is offered. (This could be in-class or withdrawal)
- e. Withdrawals of pupils for supplementary teaching. It is important that there is collaboration between class teacher and resource/learning support teacher so as to ensure the child was not consistently absent for maths instruction. Where the child was receiving additional support in maths it was agreed that many of these children were following separate individual programmes and that it was not essential that they attend the formal class instruction.
- f. In certain circumstances the Learning support teacher/resource teacher may withdraw some of the class for maths daily. This is a preventative approach as each teacher is working with a smaller group and children who are experiencing difficulty receive a lot of attention in an inclusive environment.

5. Equality of Participation and access.

- The school plan for Mathematics is designed to allow all children full access to all aspects of the mathematical 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 and have access to language classes.
- Children with special physical needs are catered for to the fullest possible extent.

6. Timetable

Junior/Senior Infants - 3 hours 25 mins per week

1st-6th Classes – 4 hours 10 mins per week

In a multi-class situation (2/3 Classes) each class teacher follows their own programme of work but where possible whole class activities on the same topic are included.

7. Homework

- Homework is based on the concepts and content covered in class or practising concepts already covered and mastered in the previous year's syllabus.
- Homework allocated should take account of the differing levels of ability in the class and should be a positive experience for all. Maths homework generally involve both written and oral element i.e. computation/problems and tables/mental maths.
- Practical activities should be given from time to time (e.g. measuring) bearing in mind the age and level of the class.
- Time should be given for the correcting of the maths homework and an opportunity to discuss any problems that arose.

8. ICT

- Baggin the Dragon
- Maths made easy Infants – 6th
- Numbers Up
- Apps on the iPad or Tablet
- IXL.com
- Number Shark on Laptops

All maths catalogues and brochures are kept in the office.

Software is stored in each classroom and in the Learning Support/resource room where it is accessible to all.

There is Wifi connection in each classroom and the pupils under the supervision of an adult can use the internet to enhance learning in mathematics.

9. Individual Teacher's 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 Miosuil which will be submitted to the principal.

10. Staff Development

An atmosphere of open communication exists between all the staff members and ideas and expertise is shared. Discussion and planning in class groupings is encouraged. Teachers are informed of maths related courses and encouraged to attend. Information acquired on these courses is made available to other staff members.

Time allocated at staff meetings for the discussion of maths related business when necessary.

11. Parental Involvement

The school recognises the importance of parents in a child's education and welcomes their involvement in the implementation of the mathematics programme. Such involvement could be as follows:

- A letter to infant parents with examples of number formations and recommendations on how to develop their child's mathematical awareness through everyday activities is provided
- Parents are invited to be involved in the Maths for Fun project in Middle room.
- Parents are encouraged to supervise and be involved in maths homework.
- Annual parent teacher meetings provide maths assessment information. Further meetings could be arranged at the request of the parents or teacher.
- Annual written reports are forwarded to all parents beginning of June of every year. These provide details of the child's progress in maths.

Review

This document, completed in May 2017, was the result of a review of our original policy document which was first created in January 2006 and now supersedes it. It will be reviewed again when necessary.

Ratification

This policy was ratified by the Board of Management

List of available Mathematical Equipment

Early Maths activities

- Counters: beads, buttons, unifix cubes, multi-link cubes, attribute bears, pegs and boards, lollipop sticks
- Beads, laces, pattern cards

Number and Algebra

- Early Maths equipment as above
- Class number lines, table top number lines
- Calendar
- Hundred square (with and without numbers)
- Number fans
- Digit cards
- Dice
- Base 10, hundreds, tens and units materials
- Abacus beads 1-20
- Fraction, decimal walls
- Playing cards
- Dominoes
- Loop games
- Notation/transition boards
- Calculators
- Found materials: corks, shells, nuts
- Toy cars, play people

Shape and Space

- A variety of 2D and 3D shapes
- Attribute blocks/Logic blocks
- Tangrams
- Construction straws
- Lego
- Geo-boards
- Geometric solids (3D)
- Polydrons
- Set squares, protractors and compass
- Lollipops
- Matchsticks
- Junk materials for construction, match boxes, toilet rolls
- Dominoes and card games

Measures

Length:

- Non-standard units: playing cards, straws, pencils ribbon, string...
- Height chart
- Centimetre rulers
- School charts, posters and signs
- Metre stick
- Measuring tape
- Trundle wheel

Weight:

- Balance
- Kitchen scales
- Spring balance
- Non-standard weights (beads, cubes, corks, conkers...)
- Set of standard weights
- Found materials: sample of food: 30g bag of crisps;500g box of cornflakes

Capacity:

- A variety of non-standard containers: bottles, cups, jugs...
- One litre, half litre, quarter litre containers
- Measuring spoons
- Found materials: selection of containers of different sizes...juice cartons, shampoo bottles, spoons, ladles...

Time:

- Egg timers
- Analogue and digital clocks
- Clock faces and rubber stamps
- Stopwatch
- Calendar
- Timetables, TV guides
- Two by Two Memory Game
- Fun with sums
- Bus Stop

