

Mathematics Curriculum Policy

Introductory Statement

This plan was formulated over a two year period as the outcome of the following consultative processes;

- Whole school planning days for the Revised Curriculum in Mathematics
- Class group meetings
- Consultations with the learning support teachers

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

Vision Statement

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 its aesthetic aspects
- To develop problem-solving abilities and a facility for the application of mathematics to 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 in recalling basic number facts

(Primary School Curriculum, Mathematics)

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.

Junior and Senior Infants p.20-35 Curriculum

1st and 2nd class p.40-59 Curriculum

3rd and 4th class p.64-83 Curriculum

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

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. 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 Action Maths programme by Folens is in use up to Second class. The Senior classes use Mathemagic by CJ Fallon. These texts cover all strand units in each class. Teachers do not rely totally on the textbook and use active learning wherever possible. 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 the children who need reinforcement of concepts (e.g. Mathemagic Shadow book for First and Second class). Texts listed 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 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 in 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 of 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 accessible within the classroom and the children's maths work will be displayed where appropriate.
- Classroom doors are numbered and heights and distances marked in the corridor downstairs.

- Class teachers can have “Puzzle of the week” at their discretion where 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 health and safety policy.

2.7 Language

Mathematics has its own vocabulary and grammar. It must be spoken before being read and read before being 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. We have agreed the following:

Addition and Equivalence

Junior Infants:

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

0 is referred to as zero not nought.

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 top number

eg 45

+19

Say “five plus nine is fourteen. Put down 4 and carry one ten”

Subtraction

Second class

Start at the top

e.g. 48
 - 21

 27

Say “ 8 take away 1 leaves 7”

Borrowing and regrouping

e.g. 34
 -18

Say “4 take away 8 I cannot do so I use a ten. This gives me 14 units”.

Multiplication and Division

Symbols are introduced in third class. See Appendix 2 “Vowels of Maths”
for vocabulary

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.

Children need to be taught strategies to problem solve. The following are three strategies that we will use

The ROSE Approach

1. **R**ead the problem. Paraphrase the problem Try substituting simpler numbers for larger numbers or fractions or decimals. This makes estimating easier.
2. **O**rganise the mathematical operations you will use
3. **S**olve the problem
4. **E**valuate your answer. Was it the best method? Does it match the estimate?

RAVECCC

1. **R**ead the problem carefully
2. **A**ttend to the key words
3. **V**isualise the problem
4. **E**stimate the answer
5. **C**hoose the numbers to use
6. **C**alculate the result
7. **C**ompare the answer to the estimate

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

The RUDE Approach

1. **R**ead the problem.
2. **U**nderline key words
3. **D**raw a picture or diagram
4. **E**stimate the answer

2.9 Presentation of Work

Recording of maths work in infants is done in 2 centimetre squared copy. From 1st class upwards, smaller 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 on responsibility for particular tasks within a group e.g. measurement.

Maths games have been purchased with a view to introducing them into the first class room under the “Maths for Fun” programme. This programme is funded under the Deis 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 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.

3. Assessment and Recording 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 Action Maths teacher's manuals contain end of term tests, which focus on the work covered over the previous term.

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 practise 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 STEN score of 3 or less in the Sigma T, then one to one assistance is offered. (This could be in-class or withdrawal).

5. 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 and have access to language classes

Children with special physical needs catered for to the fullest possible extent

6. Timetable

Junior/Senior Infants	2 hours 15 mins	per week
1 st – 6 th Classes	3 hours	per week

Withdrawal 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.

In a multi-class situation (2 classes)

It was agreed that the teacher would teach the whole class and would then assign different activities geared at the varying levels of ability. Further extension of the lesson could proceed with the senior of the two classes.

In certain circumstances the Learning Support teacher/Resource teacher will withdraw half the split 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. In a large single class situation we split the class in two groups so that the class teacher and the learning support teacher are working with smaller numbers

7. Homework

- Homework is based on the concepts and content covered in class.
- Homework allocated should take account of the differing levels of ability in the class and should be a positive experience for all. Maths homework will generally involve both a 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

- Adventures in My World
Puzzles, patterns, sound matching & counting
- Mouse Island
Maths and IT through puzzles and games
- Number Bunnies
- Big Maths Adventure
- Fizzy's Number Skills
- Fizzy's First Numbers
- Tizzy's Toy Box
- Maths City 1
- Maths Attacker x 2
- Numeracy Bank 3
- Multiplication and Division
- Shapes and Nets
- DK Big Maths Adventure
- Number Shark
- I Love Maths
- Number Train

Ms. Forrestal keeps all maths catalogues and brochures in her classroom.

Software is stored in each classroom and in Ms Molloy's room where it is accessible to all.

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

E-mail can be used to contact other schools and community groups.

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 is 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 First Class.
- 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 in June of every year. These provide details of the child's progress in maths.

Review

This document, completed in October 2008, was the result of a review of our original policy document which was first created in June 2006 and now supersedes it. It will be reviewed again in 2010.

Ratification

This policy was ratified by the Board of Management by

on

Appendix 1

List of Available Mathematical Equipment

Early Maths activities

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

Numbers and Algebra

- Early Maths equipment as above
- Class number lines, table top number lines
- Calendar
- Numicon
- Hundred square (with and without numbers)
- Number fans
- Digit cards
- Floor numbers
- Dice
- Base 10, hundreds, tens and units materials
- Abacus beads 1-20
- Abacus beads 1-100
- Fraction, decimal walls

- Playing cards
- Dominoes
- Loop games
- **Notation/transition boards**
- Calculators
- Found materials: corks, shells, nuts
- Toy cars, play people
- Food: hula hoops, dolly mixtures, smarties ...

Shape and Space:

- A variety of 2D and 3D shapes
- **Attribute blocks/Logic blocks**
- Tangrams
- Construction straws
- Lego
- Mobilo
- 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 & signs
- Metre stick
- Measuring tape
- Trundle wheel
- Abacus beads metre measure

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 ...
- Funnel

Time:

- Egg timers
- Analogue and digital clocks
- Clock faces and rubber stamps
- Stopwatch
- Calendar
- Timetables, TV guides
- Sequencing pictures

Money:

- Play money
- Catalogues, menus, pricelists
- Euro coins from different countries

Data:

- Dice
- Spinners
- Cubes and bags
- Playing cards