

Whole School Plan for Mathematics

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Mathematics

■ Introductory Statement and Rationale

(a) Introductory Statement: On October 1st 2014 the existing plan for Maths was reviewed and changes necessary were identified. All teachers were involved in this process.

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

■ Vision and Aims

(a) Vision:

- Mathematical literacy is of central importance in providing our pupils with the necessary skills to live a full life as a child and later in adulthood. We see mathematics education as being concerned with the acquisition, understanding and application of skills.
- We would hope to provide the child with a mathematical education that is both appropriate and relevant i.e. sufficiently flexible to accommodate children of differing levels of ability and reflecting their needs.
- Through the mathematics programme, the child would be enabled to make mathematical connections with mathematics itself, throughout other subjects and in applications of mathematics in practical everyday contexts.
- This plan will focus on meeting the needs of our children in the area of Maths. Parental involvement will be encouraged as much as possible to support their child's learning in Maths.

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

- To develop a positive attitude towards mathematics and an appreciation of its practical aspects.
- To develop problem solving abilities and an ability to apply mathematics to everyday life.
- To promote accurate and effective use of mathematical language.
- To enable the child to acquire proficiency in fundamental mathematical skills and in recalling basic number facts.
- To enable the child to acquire an understanding of mathematical concepts and processes appropriate to his/her level of development and ability.

■ Content of Plan

Curriculum Planning

1. Strands and Strand Units

The curriculum objectives are used as the objectives for each class level in our school:

- Junior & Senior Infants: pp.20 ó 35 Curriculum
- 1st and 2nd Class: pp.40 ó 59 Curriculum
- 3rd and 4th Class: pp.64 ó 83 Curriculum
- 5th and 6th Class: pp.88 ó 111 Curriculum.

At the start of each year teachers will familiarise themselves with the objectives for their class and make sure that their individual planning for the year incorporates all strands of the Maths curriculum.

2. Approaches and Methodologies:

The following approaches and methodologies will be used throughout the year:

- **The use of Manipulatives:** Children will have access to and use a broad range of mathematical equipment during lessons. These are available in the Junior/ Senior maths press.
- **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. Maths games are available and timetabled for each teacher.
- **Using the environment/community as a learning resource:** The school building is used as a resource to support the Maths programme. Maths trails will be used particularly during Maths week.

The following guidelines for each class level will be useful for teachers :

Class	Numerals	Counting	Operations
Junior Infants	0-5	0-10	
Senior Infants	6-10	-20	
1 st Class	to 99	-100	+ ; -;
2 nd Class	to 199	-1000	+; --;
3 rd Class	to 999		+; --; x ; -
4 th Class	to 9999		+; --; x ; -
5 th Class			
6 th Class			

Data

Children are encouraged to collect real data i.e. infant classes collect personal information and represent it on a pictogram for example; older children create and interpret bar charts and pie charts. Children in senior classes create a database to show how information technology can be used to interpret large amounts of information.

Language - Concepts/Skills

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

JUNIOR/SENIOR INFANTS

As part of the Strand Unit òNumberò, addition would be described using words òandò and òmakeò.

Words such as òplusò, òequalsò and òthe same asò would be included in the Senior Infant programme.

e.g. 3+ =5 

3 plus what makes 5/equals/is the same as 5?

How many more do I need to make/get to, í .. on the number line?

Subtraction for both years would include words òtake awayö and òleavesö.

FIRST/SECOND CLASSES:

When adding 2 digit numbers start with the highest and add on.

Look for doubles

e.g. 34

21

+34 (4+4 first)

Look for numbers which add up to 10

e.g. 22

31

+18 (2+8 first)

In areas of subtraction, start with the top number.

e.g. 18

 -14

(8 takes 4, equals/is 4)

When renaming in addition

t.u

16

+16

6+6=12; 12 can be called 1 ten and 2 units leading to 32 (3t and 2u)

With renaming in subtraction

t.u

52

-18

ò5t and 2u becomes 4t and 12 uö

THIRD/FOURTH CLASSES:

This symbol for division $\overline{)}$ will be used for short division

In long multiplication the example below shows the position of numbers to be carried.

$$\begin{array}{r} 38 \\ \times 24 \\ \hline 152 \\ +760 \\ \hline 912 \end{array}$$

FIFTH/SIXTH CLASSES:

In the area of fractions use the expression 'top heavy fraction' as well as 'improper fraction' and 'invert' as well as 'turn it upside down'.

In the area of multiplication, use the verbs 'multiply' and 'times'.

In finding percentages use the three methods.

i.e. decimals e.g. 25% of 200 = 200×0.25

fractions e.g. 25% of 200 = $\frac{1}{4}$ of 200

% over 100 e.g. 25% of 200 = $\frac{25}{100} \times 200$

$$100 \quad 1$$

This information will be communicated to new teachers (i.e. induction of new staff member and to parents by making the plan available to them, should they wish to see it.

Place Value

In place value, the word 'units' will be used rather than 'ones'.

Written Methods

To ensure a common approach to the teaching of subtraction and fractions, we have agreed the following:

Subtraction

Vertical: Start from the top using the words 'take away'

Horizontal: Read from left to right using the words 'take away'

Renaming/regrouping will be the method used throughout the school.

Fractions

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

$$5 \frac{1}{4} + 3 \frac{1}{2} = 8 \frac{1}{4} + \frac{2}{4}$$

In multiplication and division improper fractions are used

$$3 \frac{1}{2} \times 2 \frac{2}{3} = \frac{7}{2} \times \frac{8}{3}$$

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

Tables

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

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

Skills

The following skills will be acquired by the children through the study of the various strands in the Curriculum:

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

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

Problem Solving

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

RUDE

R Read the problem

U Underline the key words

D Draw a picture or diagram.

E Estimate the answer

R Read



U Underline



D Draw



E Estimate



Additional Help

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

3. Assessment and Record Keeping

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

Teachers select from the following range of assessment approaches:

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

Teacher Observation

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

Observations may include the following:

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

Teacher designed tests and tasks

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

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

Standardised Testing

Criterion referenced standardised tests are used as follows:

- Assessment Tests from the Maths scheme are used throughout the school
- Children may 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.

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

- Children are formally assessed by means of the MIST in February of Senior Infants. Sigma-T tests are given to all classes from 1st to 6th every May.
- The results of each child's tests will be kept in their school file to be stored
- Sigma-T results are communicated to parents through the end of year reports.
- In line with the school's policy on record keeping school files are kept until the child reaches the age of 21.

4. Children with Different Needs

The Maths programme aims to meet the needs of all children in the school. This will be achieved by teachers varying the pace, content and methodologies to ensure learning for all children.

The performance of pupils on the standardised tests, in conjunction with the recommendations of the class teacher will determine their suitability for learning support for Maths. The availability of supplementary teaching for Maths, however, depends on the case load of the Learning Support Teacher. Diagnostic tests may also be administered where the need arises. Parental permission must be obtained before these tests are administered.

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

Station teaching and team teaching will be engaged with to facilitate all pupils' needs. This will be in mixed ability groups

For children of exceptional ability, opportunities will be provided to work on extension activities. Parents will be consulted and opportunities for further development will be explored i.e. contact with the Centre for Talented Youth.

5. Equality of Participation and Access

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

Organisational planning

6. Timetable

The following time is allocation for Mathematics in line with Circular 0056/2011 *Literacy & Numeracy Strategy*:

- Infants Classes: 3 hours, 25minutes.
- First Class ó Sixth Class: 4 hours and 10 minutes.

Timetables must record this time allocation for Maths.

7. Homework

In this school

- Homework should be in line with the approaches as set out in the curriculum for Maths
- Homework allocated should take account of the differing levels of ability in the class and should be a positive experience for all
- Time should be allocated as part of the Maths lesson for correction of Maths homework and the review of any problems arising.
- If children have a problem with homework, each child has a homework diary, which also acts as a means of communication between parent/teacher

8. Resources and ICT

The following areas are discussed in this section:

- Concrete Materials
- Calculators
- ICT
- Textbooks and workbooks
- Supplementary materials.

Concrete Materials

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

- An inventory of all Maths equipment is available from the office.
- All Maths equipment bought with school funds remains the property of the school
- Teachers may borrow equipment from other classes but must make sure that it is returned promptly
- Additional resources are stored in the Junior Maths Press/Senior Maths Press. Items must be signed for and returned within a week.

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 problem solving questions. It is important that the skill of estimation is developed along with the use of the calculator.

ICT

Software used must include a variety of activities to develop the children's conceptual knowledge and problem-solving skills in addition to drill and practice activities..

Textbooks/workbooks

- Textbooks are selected as part of the Book Rental Scheme and will reflect the objectives of the curriculum.
- The scheme currently in use throughout the school is Maths Matters. This scheme is used in all classes from Junior Infants to 6th class as the basic text.
- Teachers should not use the text chosen for the next class level in the same scheme as this may lead to difficulties in terms of continuity and progression in the following year. .
- Where a teacher deems necessary supplementary materials will be designed/supplied.

9. Individual Teachers' Planning and Reporting

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

10. Staff Development

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

11. Parental Involvement

Parents are encouraged to support the school's programme for Maths. Each year, in September, teachers hold meetings with the parents from their class. A part of the function of these meetings is to inform parents of the Maths programme for that year. Particular attention should be drawn to:

- The importance of trial and error, estimation, the use of concrete materials and the role of calculators
- The school's approach to e.g. subtraction, division, calculations using fractions í
- The fact that Maths homework may be based on practical activities
- The use of the Homework Journal as a vehicle for two-way communication between teacher and parent on progress in Mathematics and other issues.

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

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

field outings.

12. Community Links

Members of the local community may be invited to assist the school's Maths programme. Proposed invitations must be discussed in advance with the principal. Procedures for guest speakers must be followed.

■ Success Criteria

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

- Implementation of revisions in the Maths curriculum will be evident in teachers' work
- Continuity of content and methodology will be evident in teachers' preparation and monthly reports
- Ongoing 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.
- School Self Evaluation Action Planning for Numeracy will determine success.

■ Implementation

- (a) **Roles and Responsibilities:** Class teachers are responsible for the implementation of the Maths programme for their own classes. The post holder with responsibility for Maths supports the implementation of the Maths programme and is responsible for distribution and monitoring of resources
- (b) **Timeframe:** School years 2014 -2018.

■ Review

Progress made during this school year will be reviewed at the June 2018 staff meeting and will be based on results of assessments across all classes and on teachers' views as to the effectiveness of the plan.

■ Ratification and Communication

This plan was ratified by Board of Management on the January 28th 2015
The plan was communicated to teachers and implemented in classes from February 2015.

Signed _____ Date _____
Chairperson of the Board of Management