

■ **Title: Whole School Plan for Mathematics, Scoil Íde, Clondalkin, Dublin 22**

■ **Introductory Statement and Rationale**

(a) Introductory Statement

This whole school plan in Mathematics was prepared and reviewed by the staff of Scoil Íde, New Road, Clondalkin during the academic year 2011/2012 and will be implemented in September 2012. The target group who worked on the plan included Barbara Costelloe, Anne-Marie Smyth, Therese Hanly, Aine Lee, Roisín Irving and was coordinated by Audrey Dempsey, the post holder for Mathematics. In preparing the plan parents and members of the Board of Management were consulted.

It was ratified by the Board of Management in 2012.

(b) Rationale

This plan was designed in order to:

- Review, consolidate, clarify and build upon aspects of existing mathematics plans
- Organise and coordinate work being carried out already by staff in mathematics
- Establish and provide a resource for staff members
- Provide a framework within which more specific planning can take place
- Provide information for Teachers, Parents, SNAs, BOM Members and all other interested educational partners of the school community.

■ **Vision and Aims**

(a) Vision:

In conjunction with our school's vision statement, and school aims, it is our intention to help each child develop to his/her full potential. We present our pupils with a carefully planned and coordinated curriculum that ensures sufficient opportunity for each student to acquire essential knowledge and skills, takes account of individual needs and meets the requirements of the Primary Curriculum. It is our aim that when a child leaves sixth class he/she will be able to recall basic number facts, think logically, solve problems, interpret data and have the required mathematical skills to enable them to reach their full potential.

(b) Aims

- 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.

(c) Objectives

We endorse the objectives of the Primary School Maths Curriculum as detailed on pages 12 – 14 of the Curriculum document.

■ Content of Plan

Curriculum:

<u>Infant Classes:</u>	
<i>Strands</i>	<i>Strand units</i>
Early mathematical activities	<ul style="list-style-type: none"> • Classifying • Matching • Comparing • Ordering
Number	<ul style="list-style-type: none"> • Counting • Comparing and ordering • Analysis of number <i>Combining</i> <i>Partitioning</i> <i>Numeration</i>
Algebra	<ul style="list-style-type: none"> • Extending patterns
Shape and space	<ul style="list-style-type: none"> • Spatial awareness • 3-D shapes • 2-D shapes
Measures	<ul style="list-style-type: none"> • Length • Weight • Capacity • Time • Money
Data	<ul style="list-style-type: none"> • Recognising and interpreting data

First and Second Classes:

Strands	Strand units
Number	<ul style="list-style-type: none">• Counting and numeration• Comparing and ordering• Place value• Operations Addition Subtraction• Fractions
Algebra	<ul style="list-style-type: none">• Extending and using patterns
Shape and space	<ul style="list-style-type: none">• Spatial awareness• 2-D shapes• 3-D shapes• Symmetry• Angles
Measures	<ul style="list-style-type: none">• Length• Area• Weight• Capacity• Time• Money
Data	<ul style="list-style-type: none">• Representing and interpreting data
<u>Third and Fourth Classes</u>	
Strands	Strand units
Number	<ul style="list-style-type: none">• Place value• Operations Addition and subtraction Multiplication Division• Fractions• Decimals

Algebra	<ul style="list-style-type: none"> • Number patterns and sequences • Number sentences
Shape and space	<ul style="list-style-type: none"> • 2-D shapes • 3-D shapes • Symmetry • Lines and angles
Measures	<ul style="list-style-type: none"> • Length • Area • Weight • Capacity • Time • Money
Data	<ul style="list-style-type: none"> • Representing and interpreting data • Chance
<u>Fifth and Sixth Classes</u>	
Strands	Strand units
Number	<ul style="list-style-type: none"> • Place value • Operations • Fractions • Decimals and percentages • Number theory
Algebra	<ul style="list-style-type: none"> • Directed numbers • Rules and properties • Variables • Equations
Shape and space	<ul style="list-style-type: none"> • 2-D shapes • 3-D shapes • Lines and angles
Measures	<ul style="list-style-type: none"> • Length • Area • Weight • Capacity • Time • Money
Data	<ul style="list-style-type: none"> • Representing and interpreting data

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| | <ul style="list-style-type: none">• Chance |
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2. Approaches and Methodologies:

2.1 General

All children should be provided with the opportunity to access the full range of the Maths Curriculum. In our school we ensure this happens as follows:

- There is more emphasis on active learning strategies and less emphasis and reliance on appropriate textbooks and workbooks which are used as a support
- There is a hands-on approach to encourage children to understand Maths concepts using concrete materials/everyday objects which are available in their immediate local environment
- We provide the opportunity for the use of calculators in relevant learning situations from fourth to sixth class
- Pupils engage in estimation strategies through every appropriate strand within the Maths curriculum for example Shape and space/Number/Measures
- Teachers ensure that the relevant mathematical language is implemented appropriately and in context formally through Maths instruction and informally across the curriculum
- Children are exposed to a Maths rich environment both within the classroom and in the wider school environment
- All teachers integrate mathematical skills across all areas of the curriculum for example through the use of data collection in such areas as Science, History, Geography etc

2.2 Talk and Discussion

Discussion skills

- Talk and discussion in Maths is an integral part of the learning process
- Discussion skills are enhanced by: turn-taking, active listening, positive response to the opinions of others, confidence in putting forward an opinion, ability to explain clearly their point of view.

Scaffolding

- Teacher actively models mathematical language when talking through the problem-solving process.

Integration

- A thematic approach will be used for linkage within mathematics and integration across all areas of the curriculum for example measuring volumes of liquids in Science, collecting Data in S.E.S.E.

Mathematical Language in context

- Each teacher will employ the agreed list of terminology across all strands and strand units of the Maths curriculum appropriate to the class level.

Number facts

Teachers will identify common approaches to the language used in

- Addition – total, sum of, add, and...
 - Subtraction – minus, subtraction, take-away, difference, less than...
 - Multiplication – times, product of, multiply, groups of...
 - Division – divide, share, split, groups of...
 - Equals – same as, is, will be, answer is, means...
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- A common approach will be used for the teaching of number facts. The following Maths language will be used: “one four is four”, “two fours are eight”
 - Children are aware of the communicative properties of multiplication tables and of their relationship with division.
 - We teach subtraction separately from addition and division separately from multiplication.
 - When subtracting we work from the top down, for example: “nine minus five” or “nine take away five”.

2.3 Active Learning and Guided Discovery

- Addition: There is a set strategy from teaching addition. It is teacher directed and it is standardised throughout the school. It always begins from the bottom up.
- Addition with Renaming: There will be lots of practice done initially on renaming. In an example such as $36+39$ the pupils will be taught to say: “six plus nine equals fifteen (1 ten and 5 units). Write down the five units at the bottom and carry the one ten on the line. One and three are four and three are seven.
- Subtraction: In an example such as $55-13=42$ the pupils will be taught to say: five take-away three equals two, five take-away one equals four.
- Subtraction with Renaming: In examples such as $95-68=27$, the methods used will be that of renaming. Teachers will do lots of prior work on place value and renaming such as $95=9$ tens and 5 units or 8 tens and 15 units.
- Short Multiplication: Teachers will always start at the bottom. The ‘carries’ will always be placed on the line.
- Long Multiplication: Teachers will start at the bottom. ‘Carries’ will be kept on the first line and will be written small and close to their relevant number.

- Division: In short division algorithms the line will be written on both the top and the bottom. Remainders will be written small and to the right of their relevant number.
- Common denominator for addition and subtraction of fractions
- Addition and subtraction of Time: Hours and minutes will be renamed. Lots of preparatory work will be conducted by teachers.
- The decimal point: The decimal point will always go centre way and not at the bottom.
- Multiplying decimals: The students will be taught to move the decimal point and not the numbers.
- Pair work and group is a strategy for learning and discovery which is used in all classes.

2.4 Collaborative and co-operative learning

- The school has adopted a policy of giving children opportunities to engage in collaborative and co-operative learning (for example paired work, group work and whole class learning) in order to learn skills such as listening, turn-taking, appreciating the opinions and views of others.

2.5 Problem-solving

- Practical situations will be used as a basis for some problem solving.
- Children will be made aware of different strategies to solve problems, eg: acronyms, mnemonics, bookmarks, laminated pages.
- The solutions to problem solving questions could be checked by children themselves or by calculator.
- Children at all class levels will be provided with opportunities to experience problem solving activities. Eg: oral problems, using objects, using smaller numbers, referring to items in the environment.

2.6 Using the Environment

- The teachers use the school environment to provide opportunities for Mathematical problem solving e.g. maths in P.E.
- Integration allows for opportunities to use the school environment for
 - Measuring
 - Recording
 - Graphs
 - Surveys

The school is keenly aware of and involved in environmental issues, for example the Green School project. For this reason every effort will be made to use the environment in the teaching of Maths. Mathematical work and concepts are displayed in the school, for example maths corners in the classrooms

2.7 Skills through Content

- Applying and problem-solving
- Understanding and recalling
- Communicating and expressing

- Integrating and connecting
- Reasoning
- Implementing
- Estimation

2.8 Presentation of Work

- There is an agreed approach to numeral formation in the junior classes.
- There will be a whole school approach to neat and careful presentation of work.
- A variety of opportunities will be provided for recording work e.g. using ICT to record data, concrete materials for junior classes and using diagrams.

3. Assessment and Record Keeping:

Assessment is an integral part of our teaching and learning of Maths. The following assessment methods are used:

- Teacher Observation
- Teacher designed tests and tasks
- Projects and work samples
- Mastery Records
- Diagnostic testing
- Standardised testing- Sigma T will be administered in May each year in classes 1st to 6th
The results are recorded using the CD rom and results are recorded and stored in the Principal's office and resource rooms. In September the new class teacher will discuss these results with the class teacher who administered the test.
- Assessment information /results on standardised tests are shared with parents at the annual Parent Teacher Meetings. The results are sent home in first and fourth and classes as recommended by the Department of Education

4. Children with Different Needs:

- Children with special needs have access to all strands of the mathematics curriculum.
- Teachers will tailor the Mathematics curriculum to make it accessible to all children.
- Differentiation is used at every class level within the class.
- The SET team provides supplementary teaching in Maths for children identified with learning difficulties. The availability of supplementary teaching for maths depends on the case load of the learning support team.
- The SET team have access to and make use of many resources to assist children with special needs.
- ICT is used regularly to support teaching and learning for children with special needs.

4.2 Children with exceptional ability

The school will provide a range of strategies to provide challenges for children of exceptional ability such as

- Differentiated mathematics programme
- The use of ICT to support their work
- Opportunities to work with other children.

5. Equality of Participation and Access:

- All children will have access to the Maths programme irrespective of background or ability.
- All children have access to services, facilities, or amenities in the school environment.

Organisation:

6. Timetable:

A minimum of 3 hours and 15 minutes each week is allocated for the formal teaching of mathematics in infant classes and 4 hours 10 minutes in classes 1st to 6th as outlined in the Introduction to the Primary School Curriculum.

7. Homework

- Mathematics homework should reflect an active learning approach
- Maths homework will be achievable and therefore be differentiated according to the child's need as appropriate.
- Class teacher and resource/ learning support teacher will decide if child does class homework or differentiated programme.

8. Resources and ICT

- Maths equipment is stored centrally where all teachers can easily access resources.
- An inventory of all resources is stored with the resources.
- Teachers sign out and in resources.
- Each class has supplementary resources such as posters that correspond to their maths programme.

ICT

- Software to support mathematics is available in the computer room.
- The internet is used by teachers regularly and useful websites are listed in the computer room where staff can list new websites that have age appropriate activities.
- The school has an internet usage policy which is adhered to by pupils and teachers alike.

9. Individual Teachers' Planning and Reporting

- This school plan and the Curriculum documents for mathematics will provide information and guidance to individual teachers for their long and short term planning.
- A record of what has been taught can be found in each teacher's monthly report which is submitted to the Principal.

10. Staff Development

- Teachers are made aware of opportunities for further professional development through participation in courses.

11. Parental Involvement - Home School Links

In our school we encourage and welcome the involvement of parents in their children's education. Such partnership is exemplified in

- Our initial meetings for parents of the incoming Junior Infants at which the importance of counting, sorting, matching etc with young children is discussed
- Annual parent/teacher meetings which allow for a discussion of individual children's progress in Maths will be organised
- Informal parent teacher meetings will be convened at the request of the teacher or parent in order to discuss concerns about a child's progress in Maths.
- Action plans designed and implemented, (for example Paired Maths), by staff, will on occasions require the assistance and involvement of parents.

12. Community Links

- Members of the local community may be invited to assist the school maths programme .

• Implementation

(a) Roles and Responsibilities:

The post holder for maths will coordinate the progress of the plan, encourage and accept feedback on its implementation and report to staff & Principal on findings.

(b) Timeframe:

The plan will be implemented in September 2012

• Review

(a) Roles and Responsibilities:

The plan will be monitored by all members of staff under the guidance of the Principal & Board of Management

(a) Timeframe:

The first review will take place at the May 2013 staff meeting.

• Ratification and Communication

This plan was ratified by the Board of Management in _____

Each teacher received a copy for their school plan folder.