



# St. Raphaela's Primary School

## Policy for the Teaching of Mathematics

### **Introduction:**

All members of the teaching staff of St. Raphaela's Primary School drew up this document. It describes our agreed approach to the teaching of Mathematics in this school. It is intended primarily for ourselves as a staff to ensure consistency and continuity in our approach and to help improve the children's learning of Maths. It is also intended to serve as part of an induction to the school for new teachers and for other partners in the education process.

The Board of Management of the school approved this policy in February 2004. It was reviewed and revised by all staff in February 2006.

### **Vision Statement:**

One of our principal aims at St. Raphaela's is to help each child to develop to his/her best potential. We want each child who leaves the school in 6<sup>th</sup> Class to be able to recall basic number facts, think logically and solve day-to-day problems as they meet them. We hope that each child will be able to interpret data and have the skills to lead a full life as a child and later as an adult.

### **Aims:**

Our primary aims in the teaching of Mathematics 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 every-day life
- To enable children to use mathematical language effectively and accurately
- To enable children 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

### **Curriculum Content and Broad Objectives:**

We have agreed a Scheme of Work for Mathematics for each class, which is in the red book of yearly schemes available in every classroom. This scheme is based on the objectives outlined in the Revised Curriculum, and on the overview outlined on page 70 of the teachers' guidelines. We have also created a table showing how each strand in Mathematics is developed throughout the school.

At present we are using "Maths Matters" by EDCO for classes from First Class upward and "Mathemagic" by CJ Fallon in Junior & Senior Infants. Each teacher has other Maths books to supplement the class core book. Mental and oral Mathematics form an intrinsic part of each Maths lesson.

### **Methods:**

We believe that it is very important for children to be allowed to discuss mathematical problems together in class, to explore differing points of view and to reach correct solutions in a process of working out rather than by learning by rote. This will require talk and discussion. There is a place for rote learning in the memorisation of number facts, but only after a child has fully understood these. We believe that children usually learn best through the use of concrete materials, and these will be available and will be used where appropriate. Our approach to the teaching of maths is a collaborative one where children are allowed to discuss together, help each-other, and through the use of games, and indeed of the every-day environment such as timetables, shopping lists, tourist brochures, etc. learn mathematics in a way that is relevant to their own experiences.

Children will be encouraged to use a variety of strategies to solve problems. These will include making a chart or table of the information, looking for patterns in a problem, making a guess and testing their answer out, and solving a simpler version of the problem. Children will be encouraged to re-read the problem several times, and in class discussion they will always be taught to respect the ideas of others. Having solved a particular problem, children will be asked to invent other problems themselves, offering a similar challenge.

### **Layout of Work:**

In Junior and Senior Infants, children will use squared paper for Maths and they will be taught to place one number in each box and one numerical sign in each box. They will leave a space between each sum.

In First and Second Class they will leave three boxes for a margin on each page.

In Third Class children will be able to write a headline on the page with the date, the topic being covered and the relevant page of the textbook. By Third Class children will no longer write in the textbook.

Children will be taught to show the process they used in all problem solving.

### **Mathematical Language:**

+ The *plus* symbol is introduced in Junior Infants. Initially "4+3" is read as "4 and 3". Later it is read as "4 add three". Finally, near the end of Senior Infants, it is read as "4 plus 3". In First and subsequent classes other words connected with the symbol, such as "add", "make", "altogether" are explained and used.

= The *equals* symbol is introduced in Junior Infants. Initially,  $4+3=7$  is read as 4 and 3 altogether make 7. Near the end of Senior Infants it is read as 4 plus 3 equals 7.

- The *minus* symbol is introduced in First Class. Initially, 7-3 is read as 7 take away 3. Later it is read as 7 minus 3.

### Teaching Number Facts:

The teaching of number facts really begins in Junior Infants with number stories. In Senior Infants the children learn through skip counting and sequencing. Children begin to learn multiplication facts in Third Class. In our school we say once ten is ten, two tens are twenty, three tens are thirty, etc. Children should know their multiplication by the end of Fourth Class.

### Teaching Subtraction:

The minus is introduced in First Class. Initially 7-3 is read 7 take away 3, and later, towards the end of Second Class, as 7 minus 3.

Children will learn subtraction with re-grouping in Second Class. We will teach it as follows:

$$\begin{array}{r} \text{T} \quad \text{U} \\ 6 \quad 1 \\ -1 \quad \underline{9} \end{array}$$

First check the sign, and then read the sum.  
Starting at the top unit, we say one unit take away Nine units. This cannot be done so we need to take one ten and break it into ten units.

After changing and re-grouping we have five tens and eleven units. We start again:

$$\begin{array}{r} \text{T} \quad \text{U} \\ 5 \quad 11 \\ 6 \quad 1 \\ -1 \quad \underline{9} \\ 4 \quad 2 \end{array}$$

Always remember: we say "top unit, take away bottom unit". Starting at the top unit we say eleven units take away nine units gives two units. The tens part of the sum is completed in the same way.

### Teaching Multiplication:

We expect all children to know their multiplication tables by the end of Fourth Class. In short multiplication we will write the T U on top:

$$\begin{array}{r} \text{TU} \\ 27 \\ \underline{\times 6} \\ 2 \end{array}$$

$$\begin{array}{r} \text{TU} \\ 27 \\ \underline{\times 6} \\ 162 \end{array}$$

We say six times seven is 42. That is, four tens and two units. We write down the two units and carry the four tens which we record on top of the other tens.

We then say six two's are twelve and four are sixteen.

In long multiplication we will use the distributive method i.e.  $36 \times 24$  will be written first of all as  $36 \times 4 + 36 \times 20$ . We will place a lot of emphasis on estimation (rounding off). We will use calculators to check answers.

### Teaching Short Division:

Children are taught to record short division in the following manner initially:

$4 \overline{) 124}$  and we explain this in terms of sharing 124 equally among four children. We also explain it in terms of asking children to find out how many sets of four can be made of or are in 124. Initially children will write H T U over the appropriate figures until they understand place value.

### Teaching Long Division:

Long Division will be set out in the following manner:  $14 \overline{) 378}$

Children will estimate first:  $378 \div 14$

$$380 \div 10 = 38$$

and then judge is this a good estimate or not?

It may help the child if the child shows the multiplication process in the margin:

$$1 \times 14 = 14$$

$$2 \times 14 = 28$$

$$3 \times 14 = 42$$

$$4 \times 14 = 56 \text{ etc.}$$

### Teaching Fractions:

Fractions are introduced in First Class with halves and quarters. In 2<sup>nd</sup> and Third Class children will look at all other fractions. In Fourth Class children learn simple addition of fractions and equivalent forms of fractions.

### Teaching Decimal Fractions:

We will introduce decimal fractions in 3<sup>rd</sup> Class. Children will always write the symbols on top, hundredths, tenths, etc. They will be taught to put the decimal point in the middle of the square.

### Teaching Improper Fractions:

Improper fractions will only be introduced when pupils are very familiar with equivalent fractions.

### Assessment:

From 1<sup>st</sup> to 6<sup>th</sup> Class, children will normally have a tables test and a mental maths test each week. These classes will also normally have a Maths test at the end of each unit. Records will be kept of these tests and these will form the basis of the annual school report. From 1<sup>st</sup> to 6<sup>th</sup> Class we will use the Ballard Westwood Number Facts Tests. These are tests in addition, subtraction and for Third and Fourth Classes Multiplication and Division. Children have one

minute only to do each test. They each have a score sheet and a target score. These are administered three times a year. Scores will be kept and handed on to the next teacher at the end of each academic year.

We will administer the Sigma-T tests to all classes from 1<sup>st</sup> to 5<sup>th</sup> inclusive in January each year. Sixth Class will do this test at the end of the summer term. The teacher, a copy given to the Learning Support Teacher and copies held in the school office, will keep records of these tests. Children who are ranked in the tenth percentile or below will be considered for learning support.

### **Assisting Children with Special Needs:**

The learning support teacher will work closely with the class teacher to establish the nature of the learning difficulty, and they will liaise together on how to support the child who has difficulties (see our Learning Support Policy).

The child will work with the Learning Support teacher outside of the classroom in individual lessons or in a small group within the classroom.

Extension material will be available in each classroom for gifted children who finish work early or who need additional challenges. Work at simpler levels will also be available for those who need it.

### **Homework:**

Children will have oral maths homework in 1<sup>st</sup> & 2<sup>nd</sup> Class. Written homework will generally be given from 3<sup>rd</sup> Class upwards, depending on the topic being covered. There will be no homework on Fridays.

### **Time Allocation for Maths:**

Junior & Senior Infants will spend approximately  $2\frac{1}{4}$  hours on Maths each week. All other classes will spend 3 hours & 20 minutes on Maths each week.

### **I.T.**

The school uses I.T. regularly to support the teaching of Maths. The following Maths software is available in the Computer room:

Smart learning programme (Junior Infants to Sixth Class)

Maths Mania

Maths Circus

Zoom Beams

As well as the Maths in our SMART Learning programme, we will also use the following websites:

[www.bbc.schools.co.uk](http://www.bbc.schools.co.uk)

[www.aplusmath.com](http://www.aplusmath.com)

[www.counton.org](http://www.counton.org)

[www.nrich.org](http://www.nrich.org)

[www.curaclam.net](http://www.curaclam.net)

**Planning:**

Each class teacher has an agreed annual Scheme of Work for Mathematics, which she will follow. She will make fortnightly plans for Mathematics and these will be handed into the office retrospectively on the last Friday of each month.

**Differentiation:**

Provision will be made in each class for the individual needs of each child.

**Integration with other subject areas:**

Each teacher will actively seek opportunities to integrate mathematical work with other subject areas. Mathematical skills will be used in Science, Geography and Art in particular. We will also make every effort to ensure that Mathematical work is taught within the context of the child's daily life. Use will be made of everyday items such as shopping bills,

**Marking:**

Marking will be done by the teacher and occasionally by the children themselves. On the occasions when the children mark its own or each other's work, the teacher will see every child's work. Corrections will be done either orally or in writing.

**Review Date:**

This policy will be reviewed in Autumn 2010.

# Equipment available in Maths Boxes in the Staff Room

## Number:

- 60 number fans 1-10 (available in Junior and Senior Infants)
- 10 black and white metre number sticks (one in each classroom)
- 60 black and white counting sticks divided in ten sections (available in Junior and Senior Infants)
- Counting bears / fruits, (available Junior Inf. and Resource Room)
- Cubes and lollipop sticks (Junior and Senior Infants)
- Magic Cauldron Game
- 1 Abacus
- 2 mini abacus boards (Room 16)
- Number rods (ordered)
- Soft number dice
- Number boards
- Division dominoes
- Multiplication dominoes
- Missing Number dominoes

## Fractions:

- Percent cubes
- Fraction circles
- Fraction matching cards (x4)
- Fraction strips
- Fraction box
- Auntie Pasta's Fraction Game

## Weight:

- 1 Electronic Scale
- 2 plastic metric scales - liquid/solid with plastic and metal weights
- 1 simple plastic balance
- 2 wooden balance scales
- 1 plastic balance with numbers on it
- 1 set of metric weights
- 1 box of yellow weights
- Metric dominoes
- Work cards

## Capacity:

- Measuring cylinders & 2 caps
- 3 sand funnels
- 2 ordinary funnels
- 1 bucket (5 litres)
- 8 measuring jugs

## **Shape and Space:**

- Plastic 2-D shapes
- Wooden 3-D shapes
- Polydrons - construction
- Plastic 3-D shapes
- Labels of shape names
- Attribute blocks 2-D plastic
- Chart of 3-D shapes
- Power polygons
- Tangrams
- Foam pattern blocks
- Strategic counter game

## **Place Value:**

- Place value cards
- Base ten material
- 2 calculators
- Place value dice
- Thousands dice
- Red plastic number line 1-5
- Hundred Square
- Number flips (x2)

## **Time:**

- 3 Clocks
- 27 plastic time cards
- 24 hour clock dominoes
- Time matching cards

## **Length:**

- 3 meter sticks (unmarked)
- 2 Trundle wheels

## **Area:**

- An Introduction to Area box-set

## **Others:**

- Percentage dominoes
- Unifix cubes
- Pegboards
- Tables workbooks (Prim Ed)