



St John's Catholic Primary School

Maths Policy

'I have come that you may have life and have it to the full'

(John 10:10)

Mathematics is a creative and highly inter-connected discipline that has been developed over centuries, providing the solution to some of history's most intriguing problems. It is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment. A high-quality mathematics education therefore provides a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject.

Primary Curriculum 2014

Aims and objectives

By the time children leave St John's Catholic Primary School it is our aim that they should:

- Be numerate
- Be fluent in reasoning and problem solving
- Be able to use their mathematical knowledge to solve problems
- Be able to estimate and approximate
- Reach their full mathematical potential
- Use appropriate mathematical language
- Have an aesthetic and spiritual appreciation of the creative aspects of maths
- Be able to handle and interpret data
- Be familiar with mathematical apparatus
- Be able to relate maths to other areas of the curriculum, "Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas" (Primary Curriculum 2014)

Foundation Stage

By the end of the foundation stage our children will be expected to be confident and competent in learning and using key skills. The areas of learning include:

- Counting
- Sorting
- Matching
- Seeking patterns
- Making connections
- Recognising relationships
- Working with numbers, shapes space and measures

Mathematical understanding is also developed through stories, songs, games and imaginative play so that the children enjoy using and experimenting with numbers, including numbers larger than ten.

Key stage 1 – years 1 and 2

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and related facts to 100 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower key stage 2 – years 3 and 4

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and

including the 12 multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper key stage 2 – years 5 and 6

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

Success Criteria

How will we know that this policy is being implemented?

1. Appropriate classroom organisation including maths area, maths learning walls and evidence of equipment which is available for the children to access
2. Differentiated planning catering for different levels of ability (as appropriate)
3. Stimulating mathematical environment including diennes as a number representation, numbers lines, displays, etc. appropriate to the level of the children
4. Meaningful feedback to the children verbally and in books (see maths specific marking) to challenge misconceptions and extend learning.
5. Children are confident in tackling and using maths and enjoy doing so
6. Children achieve targets and reach their appropriate levels of attainment
7. The curriculum is used appropriately and deeper learning and understanding, opportunities for ‘real life’ maths and cross-curricular learning are evident.
8. This policy is used and understood by teachers
9. The NNC is being implemented successfully and staff confidence and expertise is continually developing in its use
10. Success and reasonable standards of achievement continue to be attained in the end of Key Stage tests and at the end of each year group.
11. Planning in each year group reflects the requirements of years programme of study and

provide opportunities for reasoning, problem solving and conceptual understanding.

How performance will be monitored and evaluated

The monitoring of maths will be the responsibility of the subject leader, attached Governor and the Senior Leadership Team.

How will it be monitored and evaluated?

- Year Leader, Subject Leader and SLT will regularly monitor planning to ensure breadth of study against the new programmes of study for each Year Group.
- Class teachers will regularly update pupil asset progression steps to identify pupils emerging, expected, exceeding skills.
- Pupil asset will be informally monitored throughout the year and formally monitored at the end of each term to assess checkpoints.
- At the end of year all pupils will complete GL assessments
- ‘No notice drop ins’ and classroom observations with feedback will take place to help maintain progress in classroom teaching and ensure the scheme is being used to its full potential to help with the children's progress.
- Evidence of achievements will be collected in the form of photographs of display, examples of work, regular book monitoring, classroom observations at all levels and across the spectrum in each classroom.

A summary sheet of key objectives from the new framework will be available on pupil asset and will be used for target setting and to pass on to the new class teacher. GL end of year assessment will provide an in-depth subject report, year group and individual reports.

Resources

The child's home and school environment should be used as a resource at every available opportunity. We provide parents with guidelines about how to help their children at home and hold Maths workshops once a year to support this. We have also implemented Maths ‘Homeworking’ a parent partnership and homework initiative up to Year 5.

‘Guided Maths’ has been implemented across the school to develop the quality of problem solving, reasoning and ‘real life’ Maths skills. Each session will comprise of approximately 20-25minutes per day and will cover a wide range of problem solving and reasoning scenarios. The impact will be monitored by class teachers, subject leaders and SLT.

Day to day resources e.g. rulers, multilink, number lines and hundred squares should be available in the classroom in clearly defined accessible areas. Resources have been ordered to ensure pupils are able to explore a range of concepts across a range of mathematical concepts.

Online resource (Abacus) has been purchased and pupil’s provided with a log in so they can access at home. These activities are specifically chosen by the teacher to consolidate class work and enable the pupils to continue to practice and develop their Maths skills at home.

Planning and Progression

Planning should be flexible and staff are encouraged to add additional class or individual requirements to ensure a topic is completely understood, however, any additional work should be in line with Curriculum 2014.

An overview of planning is available in class planning folders, subject folders or on the school website. Planning is done on a termly and weekly basis, (the weekly planning showing more detail.) Plans will be evaluated by teachers, termly and weekly as appropriate.

An updated calculations policy is in place and has a teachers and parents version.

Assessment

Assessment takes a variety of forms.

- Weekly Mental Maths activities for children in Key stage 2.
- Ongoing teacher assessment is a vital part of every lesson and should be used to inform the teachers of the daily progress and understanding of pupils.
- Teachers will regularly monitor and update the Maths Pupil Pathways to identify evidence of pupil progress.
- Children will be formally assessed through GL assessments at the end of the year. The results of these tests will be used to monitor the progress of classes, year groups and individuals and identify gaps within classes, year groups and Key stages and will be checked against the milestones on pupil assets.

Differentiation

- The resources on the framework have specific work and ideas for the less able and more able child. Teachers should use appropriate support tools to consolidate and extend the children with these needs for example, relevant materials from earlier or later in the scheme as appropriate.
- Our weekly planning sheets have opportunities to record planning for specific needs.
- Rapid Maths Intervention Programme is in place for identified pupils across the school to support pupils struggling with specific concepts.
- During Year 5 and Year 6 individual pupils will be given specific help to raise their performance through booster classes which take place before school time.
- Intervention TAs also work with a number of children across the school.

Lesson Structure

All lessons should begin or have elements of problem solving. Pupils should be actively using manipulatives appropriate to the task to develop their conceptual understanding either by necessity or by choice. High quality teaching is delivered, followed by a variety of different activities that are differentiated as appropriate. Lessons may be completed with a plenary which may be used as an assessment opportunity or to clear up any common misunderstandings, which

may occur. Every lesson will contain high quality questioning and reasoning opportunities to develop and assess pupil's conceptual and deeper understanding of concepts.

Mental Maths

Mental Maths is taught from Reception and continues up to Year 6. It should be fun and accessible to all. Each lesson begins with a ten minute Mental Maths activity which should be fast paced and reinforcing prior learning. Mental Maths is also formally assessed in various forms in Key Stage 2. Pupils are taught techniques and strategies to develop their fluency with mental calculations.

Special Needs

We ensure that our objectives, materials, resources and organisation enable all children to participate fully in mathematics, taking into account their specific needs. All classes from Reception to Year 6 have a teaching assistant for the full duration of the maths lesson to support children and help them to access lessons more easily. When appropriate, individual programmes are designed for less able pupils and these programmes are followed through in the classroom by the class teacher and the teaching assistant.

Gifted and Talented

- All classes from Year 1 to Year 6, who have identified pupils with exceptional mathematical ability, must differentiate their Maths lessons in accordance with the child's needs.
- Boosters throughout the school should also be aimed at high achievers and pupil's progress should be tracked by the class teachers.

Guided Maths

Guided Maths is a 25 minute Maths session used across the school to develop and promote problem solving and reasoning skills. The sessions are designed to enable pupils to work on a variety of skills including timetables and number bonds, five different types of pupils, real life problem solving and Maths games and activities. A group will be supported and 'guided' by the teacher each day to understand, reason and solve problems, using jotting and calculations where appropriate.

Maths Co-ordinator

The Maths co-ordinator has a key role to play in the teaching of maths throughout the school. The main duties of the co-ordinator are:

- to offer assistance in planning;
- to monitor planning;
- to order and monitor resources;

- to monitor consistency and continuity in teaching and learning;
- to monitor assessment through observations and work scrutiny;
- To identify, lead and monitor staff CPD.
- To continually evaluate the effectiveness and impact of provision.
- Liaise with SLT, Year Leaders, Class Teachers and Governors to ensure and maintain high standards in Maths.

Race Equality and Equal Opportunities

All children have equal access to the curriculum regardless of their gender, disability or ability. We plan work that is differentiated for the performance of all groups and individuals and are committed to creating a positive climate that will enable everyone to work free from racial intimidation and harassment to achieve their potential.

APPENDIX

Maths Basic Skills (St. John's Catholic Primary)

These basic skills are designed to help teachers with planning and identify 'the basics' for each year group. They aim to set out those essential elements that make the most significant difference to the quality and pace of children's learning.

The 'non negotiables' are designed with age-appropriate expectations in mind. There is a focus on the areas that children at St. John's find the most challenging. This is not to say that other matters to be taught are not equally valuable, but rather that certain basics can be identified that most powerfully help children to access, advance and secure their learning in all areas.

Number Facts:

Knowledge of number facts is highlighted in each year group from Year 1 to Year 4. Rapid recall of number facts is the foundation for virtually every other aspect of primary mathematics e.g. mental calculations:

- written calculations
- calculating area and perimeter
- fractions, decimals and percentages
- solving word problems
- recognising number patterns

Without a good knowledge of number facts then progress in these areas is always going to be slow. Areas where it has little direct influence on progress include classifying shape and symmetry.

Reception	<ul style="list-style-type: none">• Count reliably at least 10 objects.• Use 'more' and 'less' to compare two numbers.• Count reliably at least 10 objects.• Estimate number of objects and check by counting.• Recognise written numerals 1 to 9.• Say one more/less (to 10).• Add two small groups of objects (to 10)
1	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">▪ count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number▪ count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens▪ given a number, identify one more and one less▪ identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal

	<p>to, more than, less than (fewer), most, least</p> <ul style="list-style-type: none"> ▪ read and write numbers from 1 to 20 in numerals and words.
2	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward ▪ recognise the place value of each digit in a two-digit number (tens, ones) ▪ identify, represent and estimate numbers using different representations, including the number line ▪ compare and order numbers from 0 up to 100; use <, > and = signs ▪ read and write numbers to at least 100 in numerals and in words ▪ use place value and number facts to solve problems.
3	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number ▪ recognise the place value of each digit in a three-digit number (hundreds, tens, ones) ▪ compare and order numbers up to 1000 ▪ identify, represent and estimate numbers using different representations ▪ read and write numbers up to 1000 in numerals and in words ▪ solve number problems and practical problems involving these ideas.
4	<p>Pupils should be taught to</p> <ul style="list-style-type: none"> ▪ count in multiples of 6, 7, 9, 25 and 1000 ▪ find 1000 more or less than a given number ▪ count backwards through zero to include negative numbers ▪ recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) ▪ order and compare numbers beyond 1000 ▪ identify, represent and estimate numbers using different representations ▪ round any number to the nearest 10, 100 or 1000 ▪ solve number and practical problems that involve all of the above and with increasingly large positive numbers ▪ read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value. <ul style="list-style-type: none"> • Tell times to nearest minute.
5	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit

	<ul style="list-style-type: none"> ▪ count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 ▪ interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero ▪ round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 ▪ solve number problems and practical problems that involve all of the above ▪ read Roman numerals to 1000 (M) and recognise years written in Roman numerals.
6	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> ▪ read, write, order and compare numbers up to 10 000 000 and determine the value of each digit and numbers to 3 decimal places ▪ round any whole number to a required degree of accuracy ▪ use negative numbers in context, and calculate intervals across zero ▪ solve number and practical problems that involve all of the above.

The person responsible for this Policy is Adrian Watson

Date of review: July 2015

Date of next review: Sept 2016

Outcome of a piece of work

