

St Patrick's RC Primary School

Mathematics Policy

May Christ Be Seen In Us

This policy outlines the teaching, organisation and management of Mathematics at St Patrick's RC Primary School.

Our School is a Christian community, where respect and care are prominent in everything we do. At St Patrick's Primary School, we follow the ways of Jesus; using our talents and gifts to make our school special, and foster a safe and inspiring environment. During Mathematics lessons, we aspire to live out our school motto, 'May Christ be Seen in us', in all that we do. Children work together in a supportive environment, using praise to recognise one another's achievements and encouragement to ensure all children feel confident in their work.

INTRODUCTION

Mathematics is a tool for everyday life. It is a whole network of concepts and relationships which provide a way of viewing and making sense of the world. It is used to analyse and communicate information and ideas and to tackle a range of practical tasks and real-life problems.

The purpose of this policy is to describe our practice in Mathematics and the principles upon which this is based.

AIMS

We aim to develop lively, enquiring minds encouraging pupils to become self-motivated, confident and capable in order to solve problems that will become an integral part of their future.

The National Curriculum for mathematics aims to ensure that all pupils:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems.
- **reason** mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can **solve problems** by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Children deserve

- To be set appropriate learning challenges.
- To be taught well and be given the opportunity to learn in ways that maximise the chances of success.
- To have adults working with them to tackle the specific barriers to progress their understanding.

Outcomes

In Mathematics education at St. Patrick's RC Primary School we aim to sustain and develop in all children:

- confidence, understanding and enjoyment in mathematics;
- an awareness of relationship and pattern, and how these can bring about a clearer understanding of a situation;
- an appreciation of mathematics as a means of communication through which they can analyse information and ideas;
- the ability to work systematically where the task requires a careful accurate approach, as well as the ability to show imagination, initiative and flexibility when appropriate;
- independence of thought and action as well as the ability to co-operate within a group;
- problem solving skills and strategies;
- the ability to use mathematics effectively as a tool in a wide variety of situations;
- the sensible use of factual recall, non-recorded and recorded methods, calculators, and other mathematical aids.

THE NATIONAL CURRICULUM

EARLY YEARS FOUNDATION STAGE

The programme of study for the Foundation stage is set out in the EYFS Framework. Mathematics involves providing children with opportunities to develop and improve their skills in counting, understanding and using numbers, calculating simple addition and subtraction problems; and to describe shape, spaces and measures.

By the end of the reception year children are expected to reach the Early Learning Goal (ELG) outlined below:

Early Learning Goals:

- Children can count reliably with numbers from 1 to 20, place them in order and say which number is one more or one less than a given number.
- Using quantities and objects, they add and subtract 2 single-digit numbers and count on or back to find the answer.
- They solve problems, including doubling, halving and sharing
- Children use everyday language to talk about size, weight, capacity, position, distance, time and money to compare quantities and objects and to solve problems.
- Children recognise, create and describe patterns.
- Children explore characteristics of everyday objects and shapes and use mathematical language to describe them.

KEY STAGE ONE AND TWO

The Programmes of study for mathematics are set out year by year for Key Stages 1 and 2 in the new National Curriculum (2014). The programmes of study are organised in a distinct sequence and structured into separate domains. Pupils should make connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

KEY STAGE ONE

The principal focus of mathematics teaching in Key Stage 1 is to ensure that pupils develop confidence and fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources (e.g. 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 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 TWO

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 recorded and non-recorded 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 x12 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 TWO

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 recorded and non-recorded 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 formal 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.

MATHS HUB 2019

At St. Patrick's RC Primary School, in September 2019 we have joined the NE Maths Hub. The Maths Hubs and the NCETM have been working together to develop approaches to teaching for mastery within primary mathematics.

The aim of our school joining the Maths Hub are:

- High quality support for teacher professional development for the lead teachers, facilitated by the Mastery Specialist
- Support for the head teacher in addressing leadership issues related to teaching for mastery from the Mastery Specialist and the Maths Hub's leadership
- Opportunity to work closely with other schools also developing teaching for mastery.

As we begin our work with the Maths Hub we aim to continue to focus our intentions on ensuring the children have the best opportunities to develop their mathematical skills and gain a secure understanding in Mathematics.

TEACHING AND LEARNING

Through careful planning and preparation, we aim to ensure that throughout the school children are given opportunities for:

- practical activities and mathematical games
- problem solving
- individual, group and whole class discussions and activities
- open and closed tasks
- a range of methods of calculating eg. Recorded and non-recorded, pencil and paper and using a calculator
- the use of ICT to support Mathematics where appropriate.
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Our staff have high expectations of all children, irrespective of ability, and encourage them to be successful and achieve their full potential.

Where Teaching Assistants are available, they are used to support individuals or groups, either within the class or withdrawing them for intervention strategies.

CROSS-CURRICULAR ISSUES

Throughout the whole curriculum opportunities exist to extend and promote Mathematics. Teachers seek to take advantage of all these opportunities within our new topic-based curriculum.

TEACHERS' PLANNING AND ORGANISATION

The approach to the teaching of Mathematics within the school is based on:

- a Mathematics lesson every day
- A clear focus on direct, instructional teaching and interactive oral work with both the whole class and smaller ability groups.
- Each class teacher organises a daily lesson for Mathematics of an age appropriate length.

At St. Patrick's RC Primary School we follow the planning scheme White Rose which staff use as a basis for their lessons and use other resources to support the children's learning i.e. NCETM, TWINKL, Deepening Understanding, classroom secrets to ensure that the children have a variety of resources and opportunities to develop their mathematical understanding. Planning in this way enables teachers to plan for mixed age classes with clarity.

In St Patrick's Foundation Stage (Nursery and Reception classes), Mathematics is one of the Areas of Learning within the Early Years Foundation Stage Framework. Children will develop skills within this area through a mixture of focused teacher-led activities and child-initiated play. Children learn through play during their time in Foundation Stage and the main aim is to have children 'school ready' when they begin their transition into Year 1. At the end of Foundation Stage, children will be assessed against the statements within the Framework.

A scheme to improve outcomes for non-recorded calculation called 'Big Maths' is used. This ensures rigour in the teaching of, and excellent progression for all children in calculation. This will be used across the school, including Foundation stage.

A scheme to improve our fluency in times tables calculations called 'Times Tables Rockstars'. This ensures rigour in the teaching of answering all times tables at speed and is excellent for progression in the children's ability to recall their tables. This will be used from Key Stage One.

DIFFERENTIATION

This should be incorporated into all Mathematics lessons and can be done in various ways:

- Streaming - year groups are sometimes split by ability into different classes.
- Common Tasks - which are open ended activities/investigations where differentiation is by outcome.
- Resourcing - which provides a variety of resources depending on abilities eg. counters, cubes, 100 squares, number lines, mirrors, numicon, number beads, dienes
- Grouping - according to ability so that the groups can be given different tasks when appropriate. Activities are based on the same theme and usually at no more than three levels.
- Mastery - Children will NOT be advanced to work beyond the appropriate topics covered in the national curriculum. Mastery approaches such as inverse operations, written 'proves', 'how many

ways can you make ___?', 'If ___ is the answer what could the question be?', looking for deliberate mistakes and tiny teachers are simple examples which do not require extensive resourcing.

CALCULATION POLICY

The calculation policy (see calculations policy) has been put in place in light of the new national curriculum programmes of study and discussion with class teachers.

SPECIAL EDUCATIONAL NEEDS

Children with SEN are normally taught within the daily Mathematics lesson (please see the section on differentiation). However, as this is not always possible, teachers will plan for SEN children who will work with their one-to-one support to access the level of maths appropriate to them. When additional support staff are available to support groups or individual children, they may withdraw small groups to provide intervention.

Within the daily Mathematics lesson teachers not only provide activities to support children who find Mathematics difficult, but also activities that provide appropriate challenges for children who are high achievers or gifted and talented in Mathematics.

EQUAL OPPORTUNITIES

All children should have equal access to the curriculum, irrespective of particular circumstances such as race, background, gender and capability. In the daily Mathematics lesson, we support children in a variety of ways.

eg. repeating instructions, speaking clearly, emphasising key words, using picture cues, playing mathematical games, encouraging children to join in counting, chanting, finger games, rhymes etc.

PUPILS' RECORDS OF THEIR WORK

There are occasions when it is both quick and convenient to carry out formal written calculations. It is also important to record aspects of mathematical investigations. Children are taught a variety of methods for recording their work and they are encouraged and helped to use the most appropriate and convenient method of recording (see calculation policy).

All children are encouraged to work neatly when recording their work. When using squares, one square should be used for each digit.

MARKING

Maths work must be marked to show whether each answer is right or wrong. A comment may also be added which tells the child how well he/she has met the objective or the success criteria and, when appropriate, which features need to be improved e.g. errors in processes, misunderstanding of concepts, misspelt vocabulary, accuracy or quality of presentation.

Quality marking of a piece of work involves a challenge that moves children on from the skills that they have been learning in that lesson. Quality marking should take place each lesson for a group of children. This group should be rotated so that over the course of a topic, each pupil receives quality feedback to drive improvements in their learning.

ASSESSMENT AND RECORD KEEPING

The work set, combined with a scrutiny of children's recorded work over the previous weeks, helps to review how well children have taken in the topics taught and identifies any remaining misconceptions. Assessment for learning is embedded in the teaching of Mathematics and teachers use this effectively to quickly identify areas of difficulty and inform planning.

Formal Assessment

Teachers level all pupils towards the end of each term using end of Key Stage SATs, End of Topic Assessments and End of Term Assessments. Question level analysis is carried out on these tests and is used to inform planning and identify learning gaps. The results of formal assessments are recorded on the school tracking system identifying against each statement in the National Curriculum to measure children's progress.

REPORTING TO PARENTS

Parents are given the opportunity to discuss their child's progress on two scheduled parents' evenings, but understand that the schools' 'open door' policy enables them to address concerns throughout the year.

Reports are completed before the end of the summer term.

Teachers use the information gathered from their assessments to help them comment on individual children's progress.

MONITORING AND EVALUATION

Observations of Mathematics lessons by the subject leader are scheduled by the head teacher, usually termly. This time is used to monitor and evaluate the quality and standards of Mathematics throughout the school and enables the subject leader to support teachers in their own classrooms.

Opportunities for teachers to review the scheme, policy and published materials are given on a regular basis during staff meetings.

HOMEWORK

Teachers, at their discretion, may provide parents and carers with opportunities to work with their children at home. These activities may only be brief, but are valuable in promoting children's learning in Mathematics. Children have the opportunity at home to access 'Times Tables Rockstars' and weekly times tables tests happen on a Friday from Year 2 upwards.

ROLE OF THE SUBJECT LEADER

- To take the lead in policy development
- To support colleagues.
- To monitor progress in Mathematics -scrutiny of work, analysis of formal assessment data.
- To take responsibility for the choice, purchase and organisation of resources for Mathematics, in consultation with colleagues.
- To be familiar with current thinking concerning the teaching of Mathematics, and to disseminate

information to colleagues.

REVIEW

The mathematics policy will be reflected in our practise. The policy will be reviewed September 2020.