



St John's CE Primary School

MATHEMATICS POLICY

March 2020

St John's C of E (Controlled) School

MATHEMATICS POLICY

Non Statutory Policy	Review frequency EVERY TWO YEARS
Review Date -	Next Review Date – March 2022

St John's CEP School policies are approved, ratified and reviewed regularly by the Headteacher/Senior Leadership Team and/or Governing Body in the light of statutory requirements



Vision statement

*Imagine a place where all are equal and all are different,
living compassionately, learning together,
embracing challenges, building tolerance and resilience,
standing strong and making a positive difference in God's amazing world.*

ALL EQUAL, ALL DIFFERENT, LEARNING TOGETHER IN GOD'S WORLD

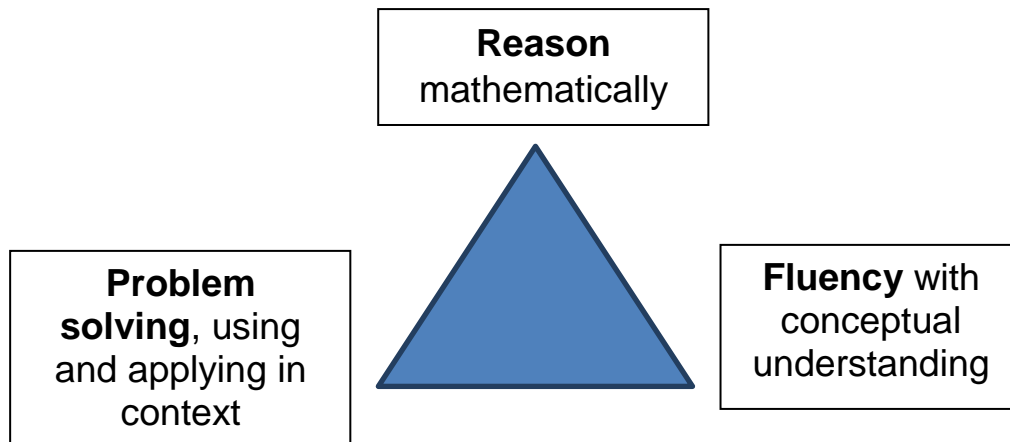
1. Intent

At St John's we aim, through well planned and engaging lessons, to create a sense of excitement and curiosity around mathematics. Through mathematical opportunities both within and beyond the classroom, children are encouraged to make links between what they are learning and the world around them. As children at St John's learn mathematics, they are acquiring fluency in mental methods as well as written methods. The high-quality mathematics education we provide, builds a foundation for understanding the world. The ability to reason mathematically, solve problems, have an appreciation of the beauty and power of mathematics, and a sense of enjoyment and curiosity about the subject is essential to everyday life. We believe in a 'teaching to mastery' curriculum where children develop as successful independent young mathematicians building the confidence to take risks and embrace challenge.

2. Implementation

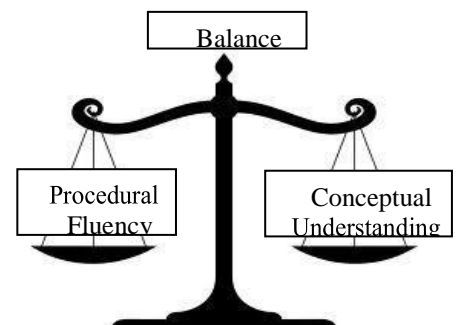
St John's follows the National Curriculum which aims to ensure all pupils:

- Become **fluent** in the fundamentals of mathematics so that they are efficient in using and selecting the appropriate written algorithms and mental methods, underpinned by mathematical concepts
- Can **solve problems** by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- Can **reason mathematically** by following a line of enquiry and develop and present a justification, including in unfamiliar mathematical language.



In order that fluency in mathematics is attained, children need to know that quick and accurate mental recall of facts is essential. Pupils are expected to practise and then apply their mathematics to a range of problems. Through a curriculum based on conceptual understanding, children are able to select and apply different mathematical methods in different contexts. Solving contextualised problems is integral to maths learning at St John's and analysing, identifying patterns, proving, recognising, remembering, identifying, using conjecture, finding relationships and making generalisations are fundamental to embedding mathematical skills that can be built on throughout our pupil's school life.

Our pupils are empowered with accurate mathematical language with which they are able to communicate their ideas effectively. Perseverance and determination are skills developed across the curriculum but particularly through problem solving in mathematics. Our approach is to balance and integrate procedural fluency with conceptual understanding.



Although the way we teach calculation is organised in a sequence, teaching staff work with the ethos that individual pupil's needs denote the part of the curriculum that should be accessed. Progression in mathematics for all children is essential and so, no matter what their starting point, through accurate assessment, high expectations and quality teaching, pupils at St John's are able to work at a level which ensures that they make progress which is built on firm foundations. All teachers at St John's ensure children with special educational needs are carefully planned for and inclusivity is at the heart of all we do. The Early Years Curriculum ensures mathematics is interactive, based on real life experiences and encompasses adult-led and child-led activities. Cross-curricular links are made where possible, particularly in science, through the use of technology and during whole school topics.



Children at St John's understand that mathematics can be found everywhere and in everything, and exploring and being creative with maths is essential to developing an enthusiasm and fascination for the subject.

At St John's we are guided by the learning principles of Jerome Bruner who theorised that people learn in three basic stages: by handling real objects, through pictures, and through symbols. The children at St John's are given opportunities to handle "concrete" things, to draw one-to-one "pictorial" iconic representations of them, then to eventually understand and use the mysterious "abstract" symbols with confidence. We call this our CPA approach and it is at the heart of our maths teaching.

The Foundation Stage

Mathematical understanding starts from before a child comes to school and is developed in the foundation stage through active hands-on learning. Every day starts with a whole class practical 'anchor' task where children are encouraged to talk about and practically explore number.

A focus area for maths is part of continuous provision and is always available for children. This area provides different physical models for maths and is set up to engage children to think, explore, discuss and reason. Key focus include subitising and number bonds to 5. Maths is provided throughout the children's learning environment to help children make connections with mathematics across the curriculum.

In Key Stage One

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 involves working with numerals, words and the four operations using the CPA approach.

At this stage, pupils develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching also involves 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 will know number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency as practice makes permanent.

Mental maths is provided every day in Key Stage One. It is planned as part of every lessons and the children's understanding is supported by visual models, including concrete, pictorial and abstract models. Mental maths is used to consolidate previous learning, to reason, to develop mental recall and to develop mental agility. Opportunities for engaging in mental maths happen throughout the day as well as in lesson time.

St. John's CE Primary School, Bayham Road, Sevenoaks, Kent TN13 3XD **T:** 01732 453944 **F:** 01732 740552



In Lower Key Stage 2

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 ensures that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At the end of Year 4, pupils take the Multiplication Tables Check (MTC) which tests multiplication facts from 2-12. Currently the test does not include related division facts however, at St. John's we teach these as they are key to a full understanding. Also at this stage, pupils develop their ability to solve a range of problems, including problems with simple fractions and decimal place value. Teaching also ensures 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.

In Upper Key Stage 2

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 and decimals. This will develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils 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 consolidates and extends knowledge developed in number. Teaching also ensures 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 will be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Mental Maths

When children join Key Stage 2 they take part in 'Mental Maths.' They are engaged in sessions of mental maths with children of similar ability. The maths groups are led by teachers and teaching assistants who, using a CPA approach, devise visual, auditory and kinaesthetic learning tasks to develop their mental fluency and agility.



Rationale

This policy contains the written and mental maths methods that are taught at St John's. It has been written to ensure consistent progression throughout the school and reflects a whole school agreement having been written in collaboration with teaching staff, children and school governors.

The progression is set out in year groups. However, children should not be discouraged from using previously taught methods with which they are secure, while the new concepts are becoming embedded. At St John's, the aim is for children to be able to independently select an efficient method of their choice that is appropriate for the given task. At St John's, we emphasise the use of models and images to help children understand calculation strategies.

Further explanation of the stages

For each of the four operations (addition, subtraction, multiplication and division), a progression of stages is demonstrated to show how a child will develop in their written and mental calculation methods. The written calculation methods have drawn examples and the mental calculation strategies are shown to demonstrate what would support this method. In addition to this, the visual equipment that will be used to support children is shown.

Commitment to working with families

At St John's, we recognise the importance of working closely with our families to support the development of all of our pupils. We run maths workshops where the teaching staff support parents and carers to understand the ways we learn maths at St John's and how they can support their child(ren) at home.