St James' First School

Maths Curriculum Overview

Reviewed November 2022

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Introduction

Maths is at the heart of everyday life; whether it is calculating the best value at the shops or working out how long a journey will take, it is difficult to avoid, and essential to understand. It is also so much more than just numbers! It's about shapes, amounts, patterns, relationships and mathematical models that can be used to solve all sorts of problems. It has a language and symbols of its own which are used to communicate increasingly complicated ideas efficiently.

Intent

At St. James' we want children to develop deep, secure and sustainable subject knowledge. This is achieved through our teaching and learning focusing on developing fluency, reasoning and problem solving and teaching for mastery. We intend to create a vocabulary rich environment where talk for mathematics is a key learning tool for all children.

We intend for all children to become fluent in the fundamentals of mathematics, developing mental agility to recall and apply knowledge rapidly and accurately, through varied and frequent practice and application of increasingly complex problems to develop conceptual understanding. We intend for all children to develop a range of skills that support them to reason mathematically by following a line of enquiry, making connections, developing an argument and justifying this through mathematical language. We intend for children to apply these skills to allow them to solve a range of problems and apply in a range of context, breaking down problems into smaller steps and showing perseverance in seeking solutions. We aim to support the children to make links across all areas of the wider curriculum and to apply these skills to their everyday life.

Our pupils will learn to:

- Develop the appropriate mathematical language associated with number, shape and position;
- Use and apply mathematics in practical tasks, in real life problems and in acquiring further knowledge, skills and understanding in the subject itself;
- Understand and use the four operations of number in relevant contexts;
- Understand relationships between numbers, learn basic number facts and develop a range of computational methods;

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- Understand place value in our counting system and understand how it can be extended into numbers below zero;
- Use their mathematical skills in simple problem solving;
- Collect, interpret and represent data in tabular, graphical and diagrammatic form;
- Develop mental methods of calculation;
- Recognise, describe and represent shapes and patterns in terms of their properties, location and movement;
- Measure quantities including length, area, volume/capacity, angle, temperature, time and mass.

Implementation

At St James', the mastery approach underpins our everyday teaching. We aim to spend greater depth embedding a subject to ensure children have a wide breadth of knowledge and understanding before moving on, this is to ensure the children do not have gaps in their subject knowledge.

To inform our planning, every class from EYFS to Year 4, follows the White Rose scheme of learning which is based on the National Curriculum 2014. Long term planning is provided by the Maths Leader and teachers use this and the additional supporting resources from NCETM, NRICH and Numicon to ensure broad coverage of the subject that is underpinned by the 5 principles of mastery.

The 5 Key Principles of Mastery

Cohesion	Sufficient time is spent on well planned sequences to ensure that key concepts are developed and deeply embedded before moving on.
Representation and structure	Mathematical concepts are explored and understood through strong models and images such as Base 10, 10-grids, Numicon, block modelling, Cuisenaire.
Fluency	Factual knowledge (e.g. number bonds and times tables), procedural knowledge (e.g. formal written methods) and conceptual knowledge (e.g. of place value) are taught in a fully integrated way and are all seen as important elements in the learning of mathematics. Children are able to efficiently select the best method from a variety that they have developed to solve problem.
Variation	Conceptual variation and procedural variation are used extensively throughout teaching, to present the mathematics in ways that promote deep, sustainable learning. This is especially evident in the practice that children are given in each session.
Deep mathematical thinking	The reasoning behind mathematical processes is emphasised. Teacher/pupil interaction explores in detail how answers were obtained, why the method/strategy worked and what might be the most efficient method/strategy

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We ensure mathematics is implemented across the curriculum to support the children's understanding that maths is required for everyday life. For example, through Computing; this is used to enhance the learning experiences of children and provide a rich learning environment. Children from Reception through to Year 4, regularly use computing hardware (including iPads, laptops and Bee-Bots) to further their understanding and application of mathematical concepts. Computing is used, effectively and purposefully, to prepare children for mathematical scenarios they are likely to experience in later life. We also utilise online learning tools; Numbots and Times Tables Rockstars both in school and at home to support multiplication practise, application and consolidation.

Spoken language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They are supported in making their thinking clear to themselves as well as others and teachers ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions. At St James' children are encouraged to justify, reason and provide proof through the use of logic prompts and open ended-questioning. Mathematical discussion is a requisite of every mathematics task both within defined mathematics lessons and through cross-curricular learning.

Early Years

In our Early Years Classroom, the children follow the EYFS Curriculum. In our Reception class, they learn mathematics through a lot of 'hands-on' learning but, most importantly, we also plan carefully to ensure the children have concrete and pictorial experiences of number. Our intent is for children to become experts in the numbers 1-10. We want them to be confident with counting but it is also key for later mathematical development that they are beginning to add and subtract as well as show a deep, conceptual understanding of place value.

Across the School

Across the school, from EYFS to Year 4, mathematics is taught daily. Children participate in a daily mathematics starter activity to support development of mathematical knowledge, fluency and reasoning and problem-solving skills. This is usually a whole class activity whereby children work with their Talk Partner to find the answer and feedback to the class, developing their mathematical language. They also revisit previous learning during our 'revisit and revise' part of the lesson, to embed previously taught learning and ensure they are secure in this area of learning. Where necessary, small group or 1:1 interventions are carried out to secure those who are finding it trickier to grasp a concept.

Teaching and learning is implemented through challenging activities and children are introduced to the Concrete, Pictorial, Abstract (CPA) approach from EYFS, exploring a range of mathematical resources including Numicon, Base 10 and counters (concrete equipment). When secure using these, they are introduced to images and diagrams (pictorial) before then moving onto the abstract approach, this is when children thoroughly understand a concept and can draw upon their knowledge and understanding to answer and solve mathematical problems. Children are taught a range of methods when approaching a task and in time, become confident to decide for themselves what resources are most appropriate to solve the problem.

Assessment informs the teaching and learning sequence, and children work on the objectives they are assessed as being at. - Children who not making the required progress are given extra support through booster sessions and

support in class in order to meet our Intent of developing pupils academically. Feedback is given on children's learning in line with our feedback policy. Formative assessment within every lesson helps teachers to identify the children who need more support to achieve the intended outcome and who are ready for greater stretch and challenge through planned questioning or additional activities. In order to support teacher judgments, children are assessed using current and reliable tests in line with the national curriculum for maths. Analysis of any tests that the children complete is undertaken and fed into future planning. Summative assessments are completed at the end of the academic year and help influence the overall judgement reported to parents in the end of year report. - The maths leader has a clear role and overall responsibility for the progress of all children in maths throughout school. Working with SLT, key data is analysed and regular feedback is provided and discussed at pupil progress meetings to inform on progress and future actions.

Impact

A mathematical concept or skill has been mastered when a child can show it in multiple ways, using the mathematical language to explain their ideas, and can independently apply the concept to new problems in unfamiliar situations. Children demonstrate quick recall of facts and procedures; this includes the recollection of the times tables. They show flexibility and fluidity to move between different contexts and representations of mathematics. Children have the ability to recognise relationships and make connections in mathematics. They show confidence in Believing that they will achieve. Children show a high level of pride in the presentation and understanding of the work

Impact will be measured through: teachers' formative assessment; summative assessments; maths scrutiny carried out by the Maths Subject Leader and by the DSAT Academic Improvement Team; in-school moderations and moderations carried out with other schools.