



SAINT JOHN'S

Mathematics Policy

Summer 2022

At Saint John's Primary School, we recognise maths as an essential life skill and we are committed to ensuring that all children have a positive and meaningful experience of the subject. We aim to present maths as a challenging, exciting and relevant subject in order to promote a confident attitude.

We have a mastery approach to the teaching and learning of mathematics. The rationale behind this approach to teaching mathematics lies within the research from the Mathematics Specialist Teacher Programme, the NCETM/ Maths Hub as well as the National Curriculum, which states:

- *The expectation is that most pupils will move through the programmes of study at broadly the same pace.*
- *Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content.*
- *Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.*

CURRICULUM STATEMENT

INTENT

The national curriculum for mathematics aims to ensure that all pupils:

- Become fluent in the fundamentals of Mathematics
- Are able to reason mathematically
- Can solve problems by applying their Mathematics

At Saint John's the maths curriculum has been devised in accordance with our whole school vision and curriculum intent, including our Christian values. Care is taken to plan maths lessons which enable all children to flourish. We are committed to ensuring that children are able to recognise the importance of Maths in the wider world and that they are also able to use their mathematical skills and knowledge confidently in their lives in a range of different contexts and the wider community.

Our aim is for every child to tackle the subject with delight and enjoyment as they develop their love of learning and encourage them to become curious learners. We aim to achieve this by encouraging discussions during our lessons to help children learn social skills, be respectful of others and to help them build positive friendships with their peers. The work set out for the children will be of a level that increases their resilience so that they can succeed in the future. We want all children to enjoy Mathematics and to experience success due to the cultural capital they have developed in the subject. We are committed to developing children's curiosity about the subject, as well as an appreciation of the beauty and power of Mathematics.

Learning to count is a fundamental childhood skill that enables them to progress and be challenged throughout life. Maths is taught through a teaching for mastery approach whereby children explore and deepen their understanding of mathematics in small, coherent steps. Mathematical concepts are introduced using the 'concrete, pictorial and abstract approach'; enabling all children to experience hands on learning and allowing them to have clear models and images to consistently further their understanding. Due to the variety of

learning styles included in our maths curriculum children are able to develop other skills such as their vocabulary and demonstrate good citizenship skills among peers. This allows children to continually progress and develop skills not only useful in the classroom but also in later life. At Saint John's, the maths curriculum is taught in blocks which allow the children to explore skills and knowledge in depth and gain secure understanding of particular subject matter. Key knowledge and skills are also revisited regularly to allow repetition to embed learning further.

A typical maths lesson will provide the opportunity for all children, regardless of their ability, to work through fluency, reasoning and problem-solving activities. Numbers are a universal language allowing children from all communities and ethnic backgrounds to work together cohesively. By building confidence, resilience and a passion for maths, we can show that whatever their prior experience or preconceptions, maths is an exciting adventure that everyone can enjoy, value and master!

IMPLEMENTATION

At Saint John's, our Maths teaching across the school places an emphasis upon a mastery approach and follows the White Rose Maths Scheme of learning, thus ensuring whole school consistency and progression. Lessons are taught daily in each class with a balance of whole class work, group teaching, practical tasks as well as individual practice. We believe in the importance of following the concrete-pictorial-abstract approach (CPA) as a means of developing secure understanding of mathematical concepts which can then be applied to a variety of contexts through reasoning and problem-solving tasks.

Key aspects of maths at Saint John's;

- Children are taught using the small steps plan of progression to allow children to develop a secure understanding and provide a gradual development of skills
- The use of CPA is a fundamental part of mastery in mathematics for all learners – not just those pupils who struggle with Maths. The use of concrete resources and pictorial representations both scaffold and strengthen understanding and are widely used as a teaching and learning tool from Foundation Stage to Year 6.
- Each daily maths lesson will start with 'Flashback' questions enabling children to recall skills that have been taught both recently and earlier in the school year; this supports both retrieval practice and securing learning to long-term memory
- Lesson structure is based upon 'Practise It', 'Apply It' and 'Deepen It' tasks which all children have access to with a lesson. This allows pupils to practise the skills being taught as well as develop their understanding of concepts further through the use of reasoning and problem-solving questions which are integral to developing their mathematical thinking.
- We are committed to pupils becoming fluent and secure in their knowledge of Times Tables and Related Division Facts by the end of Year 4. Our pupils engage in regular low risk tasks on TTRockstars and we provide parents with Times Table key skills on the termly Maths Learning Focus sheets that are sent home.
- We ensure that all pupils are invested in their learning and are making positive contributions to lesson through the use of questioning and modelling
- The MLF sheets also provide parents with a snapshot of some of the learning that will take place during the term as well as key questions and vocally that parents can use with their child at home.

- Teachers carry out formative assessment in each session and feedback is given to children verbally, through self/peer marking and also marking of tasks. Summative assessment is also completed at the end of each block of learning / term. Both forms of assessment are used to inform future lessons as well as any additional intervention support required.
- Pupils are seated in mixed ability groups; however, teachers may group children by ability if they feel it best suits the needs of the children with a particular lesson.
- Where possible intervention is provided within the lesson or shortly after the lesson. At times, children may require further intervention to secure concepts so they are given 'short term' interventions and this information is recorded on our Intervention Maps. Interventions may include the use of Ready to Progress criteria and Plus 1 / 2 resources. Teachers keep daily records as to who requires additional support during a lesson as well as recording children who are absent for a lesson / series of lessons to ensure that they are able to 'catch-up' with missed concepts.
- Children with additional needs are included in whole class lessons and teachers provide scaffolding and relevant support as necessary. For those children who are working outside the year group curriculum, appropriate learning is provided to ensure their progress.

IMPACT

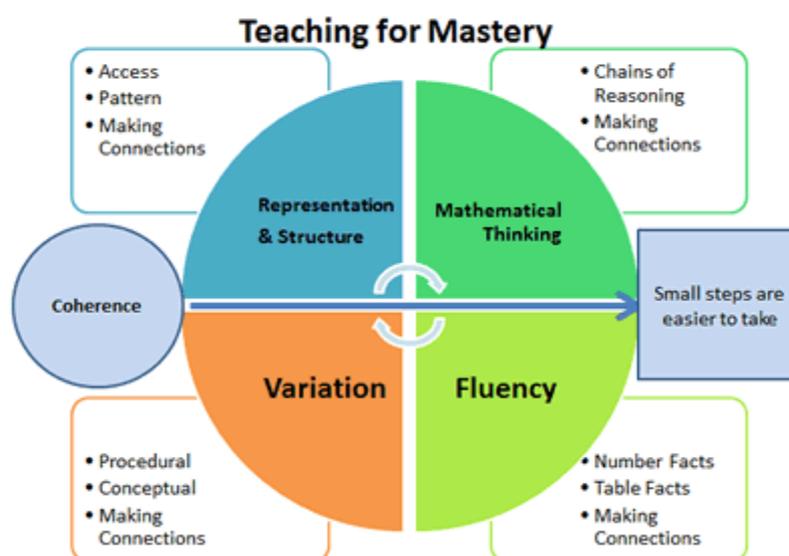
By implementing the intent, children should be confident in the following areas:

- being fluent in the fundamentals of mathematics so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- solving problems by applying their mathematics to a variety of problems with increasing sophistication, including in unfamiliar contexts and to model real-life scenarios
- reasoning mathematically by following a line of enquiry and develop and present a justification, argument or proof using mathematical language.
- having an appreciation of number and number operations, which enables mental calculations and written procedures to be performed efficiently, fluently and accurately to be successful in mathematics.

Monitoring has shown that children, across the school, find enjoyment and fun in learning Mathematics. The children have a positive mind-set towards Maths and their learning. They are appropriately engaged and there is evidence of challenge for all. Children demonstrate pride in their work, both in terms of presentation and understanding.

TEACHING AND LEARNING

Effective teaching for mastery is underpinned by five big ideas, first published by the National Centre for Excellence (NCEM) in mathematics in 2017 –



Coherence

Lessons are broken down into small connected steps that gradually unfold the concept, providing access for all children and leading to a generalisation of the concept and the ability to apply the concept to a range of contexts.

Representation and Structure

Representations used in lessons expose the mathematical structure being taught, the aim being that students can do the maths without recourse to the representations

Mathematical Thinking

If taught ideas are to be understood deeply, they must not merely be passively received but must be worked on by the student: thought about, reasoned with and discussed with others

Fluency

Quick and efficient recall of facts and procedures and the flexibility to move between different contexts and representations of mathematics

Variation

Variation is twofold. It is firstly about how the teacher represents the concept being taught, often in more than one way, to draw attention to critical aspects, and to develop deep and holistic understanding. It is also about the sequencing of the episodes, activities and exercises used within a lesson and follow up practice, paying attention to what is kept the same and what changes, to connect the mathematics and draw attention to mathematical relationships and structure.

Source: <https://www.ncetm.org.uk/teaching-for-mastery/mastery-explained/five-big-ideas-in-teaching-for-mastery/>

Maths is taught daily during the morning. A typical maths lesson lasts approximately 1 hour and begins with a short number fluency 'Flashback' activity. These activities are built upon recalling and retrieving past learning from the previous day, week, and blocks of learning.

The small step for the lesson is then shared with the children and they revisit key concepts from previous learning that support the key learning of the lesson. Children then solve contextual problems as a class, with the teacher that expose the structure of the mathematical concept. In this part of the lesson, teachers use careful questions to draw out children's discussions and their reasoning and the children learn from misconceptions through whole class reasoning. To support this, the teacher will often use a stem sentence to scaffold children's articulation of mathematical ideas and reasoning, and/or a generalisation that supports application of the concept. The variation in this part of the lesson enables a deeper understanding of the concept and may include the use of related concrete resources, as well as representations of the problem to provide a secure base of understanding.

The teacher will review responses and then share answers and strategies, addressing any misconceptions, before children continue with their practice. This practice uses conceptual and procedural variation to build fluency and develop greater understanding of underlying mathematical concepts. This 'intelligent practice' supports mathematical thinking and enables children to:

'Recognise and use connections among mathematical ideas; understand how mathematical ideas interconnect and build on one another to produce a coherent whole; recognise and apply mathematics in contexts outside of mathematics'.
(Annenberg Foundation, 2017)

ASSESSMENT

Formative Assessment - Assessment for Learning(AfL):

Children receive effective feedback through teacher assessment, both orally and through written feedback, and AfL is integral to the design of each lesson;

- The structure of the teaching sequence ensures that children know how to be successful in their independent work. Teachers will make informed choices as to when they should progress to new content according to the degree of fluency that children are able to demonstrate.
- Common misconceptions are identified and addressed within the teaching sequence and key understanding within each 'small step' is reviewed and checked by the teacher and the children before progression to further depth.
- At the end of the lesson, the children review their work and self and peer assessment are used consistently as outline by the school's 'Marking and Feedback Policy'.
- Opportunities for additional practice and correction are provided by the teacher, as appropriate, during marking, with a focus on promoting and achieving a positive growth mind-set approach in the subject. This may happen within the lesson, immediately after the lesson, or as soon as practically possible.

At the end of each blocked unit of work, the children also complete the carefully aligned White Rose Maths 'End of Unit Assessment'. The outcome of this is used by the teacher to ensure that any identified gaps in understanding can be addressed before the next unit is taught.

Each child's scores are also input on a class spreadsheet, which provides an overview of achievement in each specific area within the programme of study. This also informs dialogue with parents and carers during parent consultations, as well as the judgements made at the end of the term as to the extent that each child has achieved the expectation for their year group.

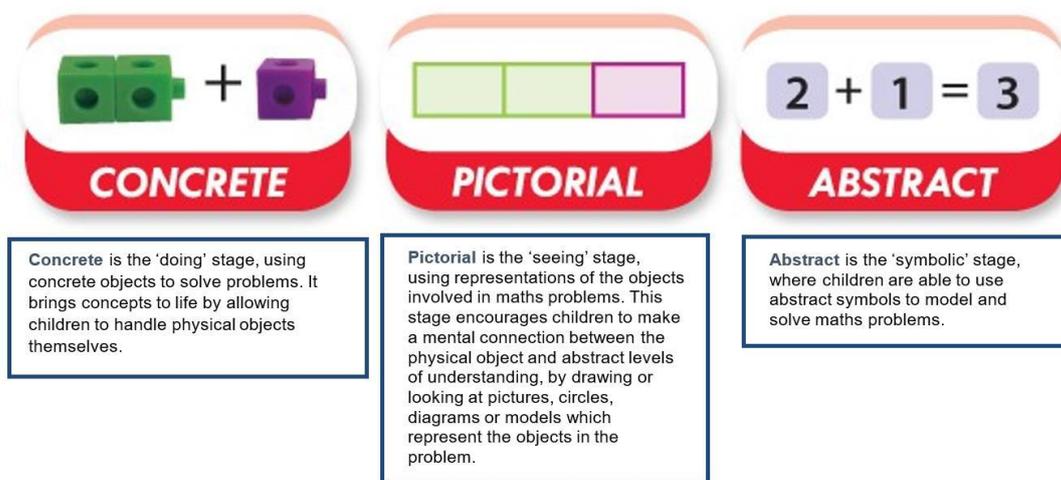
Summative Assessment

Teachers administer, three times a year, a reasoning and problem-solving paper which specifically links to the coverage for that term. The results of these assessments are used alongside the end of unit assessments and outcomes of work, to inform the whole school tracking of attainment and progress of each child.

Assessment data in maths is reviewed throughout the year to inform interventions and to also ensure that provision remains well-informed to enable optimum progress and achievement. End of year data is used to measure the extent to which attainment gaps for individuals and identified groups of learners are being closed. This data is used to inform whole school and subject development priorities for the next school year.

PLANNING & RESOURCES

The use of manipulatives objects is an integral part of the White Rose Maths scheme which incorporates the concrete – pictorial – abstract pedagogy:



Each classroom has its own supply of mathematical equipment; in line with our calculation policy (this is also available on the school's website):

<https://www.st-johns-pri.gloucs.sch.uk/attachments/download.asp?file=290&type=pdf>

Teachers also have access to the White Rose Maths Interactive Teaching Resources and Mathsbot for the purpose of modelling strategies and demonstrating the use of concrete resources.

The school subscribes to the White Rose Maths Premium Resource Centre. This provides access to visual resources (including lesson slides that teachers can adapt), as well as small

steps planning guidance and reasoning and problem solving questions that accompany each small step, to inform and use in lessons.

The subject leader attends regular training through the Local Leaders of Maths Education (LLME) network. This informs the school's use of nationally available resources, including the NCETM's ready to progress exemplification materials:

<https://www.ncetm.org.uk/classroom-resources/exemplification-of-ready-to-progress-criteria/>

Teachers are encouraged to use the school playgrounds as an outdoor classroom when possible, for example, when teaching length, area or perimeter.

ORGANISATION

The school has implemented, across all year groups, a blocked curriculum approach to the teaching of Mathematics. This ensures that children are able to focus for longer on each specific area of Maths and develop a more secure understanding over time. This approach is also designed to enable children to progress to a greater depth of understanding.

Subsequent blocks continue to consolidate previous learning so that the children continually practise key skills and are able to recognise how different aspects of Maths are linked. For example, when children have completed a block which has enabled them to master the multiplication of two-digit numbers, a subsequent block on area and shape might provide opportunities to use this understanding when calculating the area of shapes with 2-digit length and width dimensions.

EYFS

There are six key areas of early mathematics learning, which collectively provide a platform for everything children will encounter as they progress through their maths learning at primary school, and beyond:

- Cardinality and Counting
- Comparison
- Composition
- Pattern
- Shape and Space
- Measures

The learning will be based on the small-steps, mastery scheme of work from White Rose and will focus on the expectations from Development Matters / Early Years Outcomes. Mathematical understanding will be developed through a range of activities including using physical and pictorial resources, stories, song, games, child-initiated learning and structured teaching, with repetition, to secure knowledge. As pupils' progress, they will be encouraged to record their mathematical thinking in a more formal way.

<https://assets.whiterosemaths.com/Resources/early-years/guidance/wrm-reception-scheme-guidance-for-teachers-and-FAQs-autumn-2021.pdf>

A typical lesson will include;

- Whole class oral and mental starter
- Whole class main teaching
- Focus activity for small groups of children

Throughout the week, a child will work with an adult - either a teacher or a supporting adult - on a differentiated task. This structure to the lesson enables teachers to secure a good balance between whole class work, group teaching and individual practice. It also enables teachers to establish regular routines thereby maximising teaching time. It supports assessment on a daily basis, as well as individual feedback to children, ensuring that children receive immediate intervention as required during the supported focus activity.

Independent activities in the Maths area link to the focus for the week. For example, if the focus for the week is addition, then activities on the Maths will often link to this. In addition to these planned independent activities, children also have the opportunity to self-select Maths resources to consolidate their learning during child-initiated activities. We recognise the importance of play-based learning and therefore encourage children to develop their understanding during their play. Such opportunities are provided in both the inside and outside environment.

Regular observations and assessments help to ensure that children that need additional intervention to consolidate their mathematical understanding are identified and supported by appropriate interventions.

KS1 and KS2

Through Years 1 to 6 we use a coherent programme of high-quality materials and exercises, which are structured with great care to build deep conceptual knowledge, alongside developing procedural fluency. Our KS1 and KS2 teachers use White Rose Maths Premium lesson slides, which they adapt accordingly. Children record their work in either folders or exercise books.

Short term planning is done on a weekly basis. Teachers also plan, modify and source activities and additional tasks which offer support and scaffolding where appropriate, and provide further challenge for children who are able to progress further in their learning. Although the White Rose Scheme provides the main structure of our lessons additional resources can be used to supplement from our agreed websites; Deepening Understanding and Primary Stars.

The White Rose Maths progression document provides an overview of how the scheme covers the statutory requirements of the 2014 National Curriculum (p3-25). It also shows how concepts build over time and how the teaching blocks are sequenced in each year group (p26-31):

<https://assets.whiterosemaths.com/fixe/wrm/2019/11/National-Curriculum-Progression-Primary.pdf>

EQUAL OPPORTUNITIES

The school is committed to ensuring the active participation and progress of all children in their learning. All children will be given equal opportunities to achieve their best possible standard, whatever their current attainment and irrespective of gender, ethnic, social or cultural background, home language or any other aspect that could affect their participation or the progress of which they are capable.

INCLUSION

Taking a mastery approach, differentiation occurs in the support and intervention provided to different children, not in the topics taught, particularly at earlier stages. The National Curriculum states:

‘Children who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.’

There is little differentiation in the content taught but the questioning and scaffolding individual children receive in class as they work through problems will differ, with higher attainers challenged through more demanding problems, which deepen their knowledge of the same content rather than acceleration onto new content. Children’s difficulties and misconceptions are identified through immediate formative assessment and addressed with rapid intervention – commonly through individual or small group support ideally later the same day or within the lesson. A range of inclusion strategies, disseminated by the Inclusion Lead, are embedded in practice and teachers are aware of the special educational needs of the children in their class, as well as those who have English as an additional language.

Although the expectation is that the majority of children will move through the programmes of study at broadly the same pace, the 2014 National Curriculum states:

‘Decisions about when to progress should always be based on the security of children’s understanding and their readiness to progress to the next stage.’

If a child’s needs are best met by following an alternative plan, including coverage of the content from a previous year, this will be overseen by the Inclusion Lead, in collaboration with the class teacher and with the knowledge of SLT.

ROLE OF THE SUBJECT LEADER

- The subject leader will raise the profile of Maths at Saint John’s Primary School through best practice. They will model lessons, as appropriate to new staff, NQTs and peers to support continued professional development. The subject leader will support staff in providing opportunities for learning outside the classroom in Maths and will identify and organise opportunities which enable this, as appropriate.
- The subject leader will monitor progression and continuity of Maths throughout the school through lesson observations and regular monitoring of outcomes of work in Maths folders / books.
- The subject leader will ensure that all staff has access to year group plans and the relevant resources which accompany them.
- The subject leader will monitor children’s progress through the analysis of whole school data, provided by the Assessment lead. They will use this data to inform the

subject development plan which will detail how standards in the subject are to be maintained and developed further.

- The subject leader will, on a regular basis, organise, audit and purchase central and class-based Maths resources.
- The subject leader will keep up to date on current developments in Maths education and disseminate information to colleagues. They will also contribute directly to the Maths Hubs programme, as a mastery specialist and support staff in demonstrating best practice to visitors from other schools as part of the school's work as a recognised centre for excellence in the teaching of mastery.
- The subject leader will extend relationships and make contacts beyond the school.
- The subject leader will develop opportunities for parents/carers to become more involved in Maths education.
- The subject leader will ensure that all staff have access to professional development including observations of outstanding practice in the subject.

PARENTS

Saint John's recognises that parents and carers have a valuable role to play in supporting their child's mathematical learning.

An overview of the Maths curriculum is available on the school's website, as well as guidance in the progression in calculation methods used by the school. Paper copies of these documents are also available on request and the Maths Learning Focus (MLF), sent home by each year group at the start of each term, also outlines the Maths topics to be covered. Parents are informed of their child's progress at Parent Consultations and this is also communicated in written school reports.