

St Joseph's Catholic Primary School



Mathematics Policy

April 2021

Mathematics Policy written: April 2021

Next review:

Linked Governor:

The importance of Mathematics

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.

(National Curriculum 2014)

At **SJCPS** we believe that children's experience of Mathematics should be one that develops their ability to think mathematically and one which allows them to apply the tools to which they have been exposed in a variety of ways. We aim to develop Mathematical skills which promote confidence and competence with numbers and measures; develops a deep understanding of the number system; practices computational skills and demonstrates an ability to solve number problems in a variety of ways i.e. gathering, counting, measuring and presenting using graphs, diagrams, charts and tables. We want to teach children that Mathematics is relevant to their world and to their everyday life- something they will need as they move on through their school journey and as their journey continues in the world. Therefore, we believe that Mathematics should include practical tasks; providing children with imaginative areas of exploration upon which to exercise their mathematical skills and develop their curiosity of the subject. These skills are a necessary tool of everyday life. Mathematics should help children to develop an appreciation of, and enjoyment in, the subject itself; as well as a realisation of its role in other curriculum areas.

Our aim

We aim to develop lively, enquiring minds encouraging children 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 children:

- become **fluent** in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that they have conceptual understanding and are able to recall and apply their knowledge rapidly and accurately to problems
- can **reason and explain 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.

Our approach

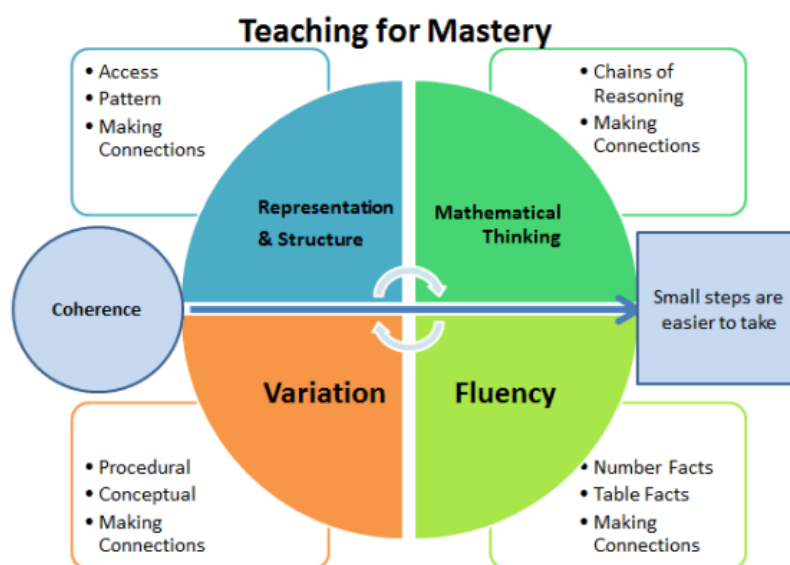
At **SJCPS** we have adopted the Mastery approach (NCETM) to the Teaching and Learning of Mathematics this means that children of all ages acquire a deep, long-term, secure and adaptable understanding of the subject. The implementation of this approach will allow for consistency and high expectations of teaching and learning across the school. The essence of the Mastery approach to Mathematics at SJCPS follows these key principles:

- **It is achievable for all** – we have high expectations and encourage a positive ‘can do’ mind set towards mathematics in all children, creating learning experiences which develop children’s resilience in the face of a challenge and carefully scaffolding learning so everyone can make progress.
- **Deep and sustainable learning** – lessons are designed with careful small steps, questions and tasks in place to ensure the learning is not superficial.
- The ability to build on something that has already been sufficiently mastered – children’s learning of concepts is seen a continuum across the school.
- **The ability to reason about a concept and make connections** – children are encouraged to make connections and spot patterns between different concepts (E.g. the link between ratio, division and fractions) and use precise mathematical language, which frees up working memory and deepens conceptual understanding.
- **Conceptual and procedural fluency** – teachers move mathematics from one context to another (using objects, pictorial representations, equations and word problems). There are high expectations for children to learn times tables, key number facts (so they are automatic) and have a true sense of number. Children are also encouraged to think whether their method for tackling a given calculation or problem is Appropriate, Reliable and Efficient (A.R.E).
- **Problem solving is central** – this develops children’s understanding of why something works so that they truly have an appreciation of what they are doing rather than just learning to repeat routines without grasping what is happening.
- **Challenge through greater depth** - rather than accelerated content, (moving onto next year’s concepts) teachers set tasks to deepen knowledge and improve reasoning skills within the objectives of their year group.

Teaching for Mastery

Our teaching for mastery is underpinned by the NCETM’s 5 Big Ideas:

- Opportunities for Mathematical thinking allow children to make chains of reasoning connected with the other areas of their Mathematics.
- A focus on Representation and Structure ensures concepts are explored using concrete, pictorial and abstract representations, the children actively look for patterns and generalise whilst problem solving.
- Coherence is achieved through the planning of small, connected steps to link every question and lesson within a topic.
- Teachers use both procedural and conceptual Variation within their lessons and there remains an emphasis on Fluency with a relentless focus on number and times table facts.



NCETM's 5 Big Ideas

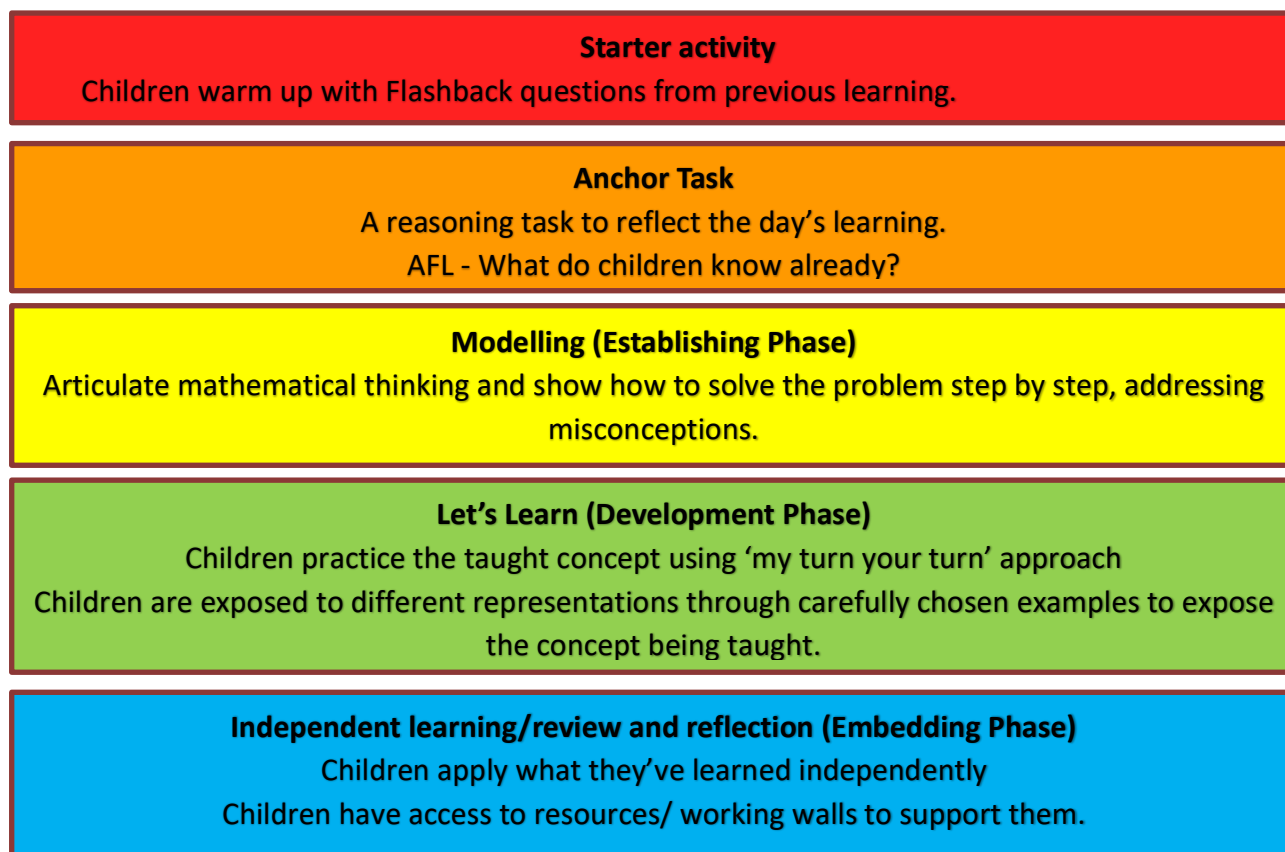
Our curriculum design and planning

Our teaching team use **White Rose** Maths Schemes of Learning as a starting point in order to develop a coherent and comprehensive conceptual pathway through the teaching and learning of Mathematics. The focus is on the whole class progressing together. Collaborative planning with year group colleagues is encouraged to ensure consistency.

- Learning is broken down into small, connected steps, building from what children already know. The lesson journey should be detailed and evident on flipcharts (Activinspire or PowerPoint)
- Difficult points and potential misconceptions are identified in advance and strategies to address them planned.
- Key questions are planned, to challenge thinking and develop learning for all children.
- Contexts and representations are carefully chosen to develop reasoning skills and to help children link concrete ideas to abstract mathematical concepts.
- The use of visual images and concrete resources are integrated into lessons.
- Opportunities for extra fluency practice (instant recall of key facts, such as number bonds, times tables, division, addition and subtraction facts) is also provided outside mathematics lessons. This includes the use of Times Table Rock Stars.
- Where possible, cross-curricular learning takes place where maths is evident in other subjects such as science to expose the real-life applications of mathematics and it's relevance to children's everyday lives

Lesson structure

The structure of every maths lesson should follow the 5- part model.



- Lessons are focused and key learning points are identified.
- Concrete/contextual ideas are used alongside pictorial representations and their abstract/symbolic representation.
- Underlying Mathematics is explored within contexts that make sense.
- Making comparisons is an important feature of developing deep.
- Repetition of key ideas (for example, in the form of whole class recitation, repeating to talk partners etc) is used frequently. This helps to verbalise and embed mathematical ideas and provides children with a shared language to think about and communicate mathematics.
- Teacher-led discussion is interspersed with short tasks involving talk partners.
- Formative assessment and other assessment for learning strategies are carried out throughout the lesson; the teacher regularly checks children's knowledge and understanding and adjusts the lesson accordingly.
- Gaps in children's knowledge and understanding are identified early by in-class questioning.
- All lessons highlight key vocabulary which children are encouraged to use alongside stem sentences to support their verbal reasoning of a concept.

Monitoring and Assessment

In order to achieve the most impact:

- Misconceptions and gaps are addressed through individual or small group intervention, either on the same day or the next day, which may be separate from the main mathematics lesson, to ensure all children are ready for the next lesson.
- In addition to the formative assessment undertaken in lessons, teachers will use termly summative assessments (during Assessment Week) supplied by the White Rose Maths Hub to reinforce their judgements and provide further opportunities to identify gaps in pupil learning and tailor future lessons. Teacher judgements are then entered onto FFT each term and teachers talk through the progress of their children at termly tracking progress meetings: this ensures targeted support can be given to those who need it.
- SJCPS Maths Team discuss their Mathematics teaching regularly; sharing teaching ideas and classroom experiences in detail and working together to improve practice and consistency of approach across the school. This encourages an understanding of the impact on teaching and learning across the school.
- Mathematics Lead participates in and organises CPD opportunities.

Inclusion for SEND

SEND children may be supported by additional adults, different resources, differentiated activities. They may also complete additional activities outside of the Mathematics lesson or be taught in a smaller group. We have high expectations of all children and strongly believe that all children are able to achieve in Mathematics. Some may take longer to grasp concepts and may need careful scaffolding or extra time/support. At **SJCPS** when delivering Mathematics we take care to ensure that a variety of learning styles are accessed and teaching methods adopted in order to show different approaches towards solving problems.

Our learning environment

Each classroom will have an informative display dedicated to Maths; this could be in the form of a working wall and should provide children with a place of reference. This should include relevant vocabulary, steps to success also examples of children's learning. Each classroom will have concrete resources to support the delivery of Maths; such items might include number lines, multiplication tables, 100 squares, 2D and 3D shapes, multilink cubes, dice and other smaller items. Children should be encouraged to use whatever resources are available to them in the classroom and which they feel would be beneficial to help them when completing Maths work.

Parental Involvement

A **SJCPS** we work with parents and carers to support and develop young Mathematical minds. We aim to encourage involvement in Mathematics by:

- Helping them to understand how to help and support their children with greater confidence
- Providing parental workshops
- If possible, sharing resources of books and equipment used alongside the maths questions
- Promoting and reinforcing the correct Mathematical terminology
- Involving parents in assemblies and class lessons