



**ST JAMES**  
C.E. PRIMARY SCHOOL

DREAM • BELIEVE • LEARN • ACHIEVE

## MATHEMATICS POLICY

At St James Primary School we aspire for every single child to succeed. Through our Christian vision we thoroughly believe that all children have the potential to thrive regardless of their starting points, personal context, and characteristics. Our children learn through a supportive and purposeful curriculum, linked tightly to national curriculum objectives, that demonstrates that:

**"With God there is no limit to what you can do. There is no obstacle you can't overcome. Through Him all things are possible."**  
(Matthew 19:26).

Our staff are committed to developing a love of learning, whilst developing the skills and values to support the all-round development of every pupil. St James C of E Primary School is a special place where we dream, believe, learn, and achieve.

### Intent

At St James, we believe that Mathematics is a key life skill for all, providing children with a means of making sense of the world in which they live. It demands practical understanding of the ways in which information is gathered, presented and sorted. Therefore, St James offers opportunities for children to develop their declarative, procedural and conditional knowledge so that they become confident and competent with numbers, shapes, measures and data and develop their ability to solve a variety of problems they may come across in real-life.

Teachers ensure that pupils understand and remember mathematical knowledge, concepts and procedure appropriate for their starting points, including knowledge of efficient algorithms to ensure pupils are ready for their next stage of education.

Children at St James will sharpen mental agility in numeracy and the ability to instantly recall basic facts by having recall opportunity to do so. They will be able to explain their strategies and talk about their reasoning, sharing ideas with others through using specific mathematical terminology. They will acquire the skills needed in handling data and interpreting information and presenting in graphs, diagrams, charts and tables.

Staff at St James will cultivate an enjoyment for mathematics and a positive attitude, approaching all problems with confidence and enthusiasm, enabling children to reach their full potential and achieve their highest possible standards.

Leaders have carefully planned and sequenced the appropriate knowledge, concepts and procedures to build mathematical knowledge and skills systematically. Leaders have produced specific progression documents in knowledge, calculation and vocabulary that have strong foundations in Early Years and build to year 6. The maths curriculum is designed with clear end points for what pupils will be able to know and do at key points. Teachers introduce new material in manageable steps, lesson by lesson. Planning will be linked directly to the mathematics programmes of study. Teachers will use formal as well as on-going teacher assessment to adapt their planning where appropriate to meet the needs of pupils. For vulnerable pupils, including those with Special Education Needs, the curriculum has been adapted to ensure the curriculum contains the content that leaders have identified as most useful.

The school curriculum allows opportunity for mathematical reasoning and solving problems so that pupils can make useful connections between identified mathematical ideas or to anticipate practical problems they are likely to encounter in adult life. The curriculum is intelligently designed so that there are sufficient opportunities to revisit previously learned knowledge, concepts, and procedures; this is to ensure that, once learned, mathematical knowledge becomes deeply embedded in pupils' memories.

### Implementation

Mathematics teaching at St James will reflect the philosophy of the National Curriculum and 'Mastery' framework to which children are taught the skills of fluency, reasoning and problem solving. The mathematics curriculum will form the basis of our maths content, providing each child with a broad, balanced, relevant and differential curriculum.

In Early Years, teachers and support staff receive specialist training to be able to use the principles and resources from 'White Rose's Jigsaw' and 'Master the Curriculum' to engineer the best possible start for pupils by closing the school-entry gap in knowledge through teaching pupils core facts, formulae and concepts which form the building blocks for the next stages of education.

To develop numeracy skills, mathematics teaching will take place on a daily for 60 minutes and will take the form of whole class, group work or individual tuition, where appropriate. Children will use a variety of methods to record and present their work, including graphs and diagrams. When completing written methods, they will follow the school's calculation policy.

Leaders have provided carefully sequenced intent documents based on the White Rose Scheme of Learning that highlight declarative, procedural, and conceptual knowledge to be taught and signposts teachers to draw on a range of high-quality resources aligned to the curriculum intent, such as, 'Target Your Maths', White Rose, NCETM, PiXL and 'Learning by Question'. ICT will also be used to support and enhance mathematics teaching where relevant. To ensure the most effective use of lesson time and the use of high-quality resources, school has chosen to utilise White Rose pupil booklets. However, staff are encouraged to use other agreed resources to allow further practice in fluency, reasoning and problem solving.

Teachers use a summative assessment system called PiXL which enables teachers to identify if pupils have retained the intended knowledge and skills. Throughout school teachers use PiXL assessment materials to analyse pupils' strengths and areas for development so that all pupils achieve the best possible outcomes.

Teachers ensure that there is flexibility in curriculum planning so that any gaps in pupils' mathematical knowledge that may hinder their capacity to learn and apply new content can be addressed swiftly. Pupils who are behind age-related expectations are provided with opportunities and resources to support them in learning the mathematical knowledge and skills necessary to catch up and keep up with their peers. This may take the form of an additional interventions, targeted teaching or bespoke resources.

### **Adaptive Teaching**

Leaders within school ensure the highest ambition for all pupils and create opportunities to experience success This is done by adapting lessons whilst maintaining high expectations by using: scaffolding, explicit instruction, cognitive & metacognitive strategies, flexible groupings, and use of technology (Mould, K. 2020 EEF). Teachers ensure the balancing of input of new content so that pupils master important concepts, i.e., 5-part teaching model, and make effective use of teaching assistants.

### **Mastery skills**

In addition to a secure understanding of number and calculation, children will be taught essential skills for high quality mathematics learning, Mastery in Mathematics means to acquire a deep, long-term, secure and adaptable understanding of the subject, which include skills, such as:

- Problem Solving – knowing the strategies and resources, which need to be used to solve a problem.
- Reasoning – being able to explain their results verbally and in written form, using mathematical language and symbols. They will be able think logically and justify their ideas.
- Securing times tables facts and be able to apply them in lessons.

### **MULTIPLICATION TABLES**

Year 1 – Count in multiples of 2, 5 and 10. Recall and use all doubles to 10 and corresponding halves.

Year 2 – Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables.

Year 3 – Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.

Year 4 – Recall and use multiplication and division facts for multiplication tables up to 12 x 12.

Year 5 – Revision of all times tables and division facts up to 12 x 12.

Year 6 – Revision of all times tables and division facts up to 12 x 12.

Weekly checks take place for pupils to practise their skills and teachers to assess their knowledge. Information is collated and monitored on a tracking system. Pupils are aware of their weekly scores and are competitive and eager to improve their own score and the class average. For those children who continually attain full marks are given an additional time challenge.

The school utilises the Times Tables Rock Stars app to enable pupils to have frequent opportunities to practice and overlearn their times tables facts related to their year group. The app uses question-based games that automatically adapts to each child's learning needs.

### **PRESENTATION**

Children must be set high expectations for the presentation of their work:

- Children will use one symbol per square when writing out calculations.
- Decimal points are used on the line between two numbers (not in its own box).
- Pencil needs to be used for all work in numeracy.
- Rulers must be used for all drawings of lines.
- The writing of explanations should be legible.
- Mistakes are crossed out using a single line.

## Long term memory

Knowledge empowers and nourishes children, it belongs to the many, not the few. A knowledge rich curriculum has the power to address issues of social disadvantaged and leaders at St James CE Primary have high ambitions so that all pupils can take full advantage of opportunities, responsibilities and experiences in later life.

Learning can be defined as alteration in long term memory, with this being the case leaders have implemented strategies taken from cognitive science to enhance and support pupils in the transfer of new knowledge into their long-term memory.

Teaching staff have drawn on research focussing on Cognitive Load Theory, and teachers understand that pupils working memory is limited and that new content should be introduced to pupils in small and manageable steps to avoid overloading the working memory.

Research from Oliver Caviglioli has also been considered and leaders utilise strategies of dual coding to support pupils in integrating new knowledge into long term memory. By providing simple images to pupils when new content is introduced, they can use both visual and auditory strategies to process the information, forming a greater link with long term memory. Spaced retrieval is also a strategy employed by teachers to enhance pupils' retrieval and in turn secure knowledge into long term memory. Lessons typically begin with a daily retrieval opportunity and additional retrieval sessions are planned over the year.

Learning is a long-term process and teachers utilise four main strategies to support pupils in being successful and confident learners. The agreed strategies are:

- Knowledge organisers (Topic and Science)
- New content in small, manageable steps
- Images to support new learning
- Spaced retrieval

## Teaching & Learning

Each teaching session in mathematics, follows the agreed school policy of teaching and learning, and is planned to support pupils long term memory development. There are 5 stages in each session:



**Activate**- teachers activate the appropriate schema and make long term links to learning that occurred in the past.



**Vocabulary** – teachers explicitly teach vocabulary that pupils need a deep understanding of to support their learning.



**Retrieve** – pupils complete a retrieval task relating to more recent learning such as self-testing key information from their knowledge organisers.



**Teach** – The teacher presents new information clearly and in manageable chunks.



**Apply** – pupils apply their learning by demonstrating their skills gained.

**Impact**

We ensure that our children develop detailed knowledge and skills across the curriculum and as a result achieve well. Pupils at St James achieve well in comparison with national standards and are ready for the next stage of their education. Pupils at the end of year 6 leave St James CE Primary being able to apply mathematical knowledge, concepts and procedures fluently and appropriately for their age.

**Prepared by:** Mr C Booth

**Reviewed Date:** September 2023

**Next Review Date:** September 2024