

Mathematics Rationale

Our vision for Mathematics at St Mary's

Our teaching of mathematics is based on the mastery approach – the belief that every child is capable of success. Our carefully designed and sequenced maths curriculum endeavours to reflect this and provide a foundation for understanding the world; the ability to reason mathematically and a sense of enjoyment and curiosity about the subject. At St Mary's Primary School, we aspire that every pupil develops a love of maths and approaches the subject with positivity and confidence. We believe that all children are entitled to a broad and balanced mathematics curriculum that allows them to maximise their learning potential, preparing them for the application of mathematics skills across the whole curriculum and life beyond education.

At St Mary's, we aim:

- To secure conceptual understanding through access to concrete resources and pictorial and symbolic representations.
- Make rich connections between ideas in mathematics to develop fluency, reasoning and problem solving.
- For opportunities to apply their understanding in a variety of contexts.
- For problem solving to challenge their thinking.
- Individual, paired, group and whole class learning and discussions.
- To use the appropriate mathematical vocabulary when explaining or discussing their understanding and reasoning to promote mathematical thinking.
- To foster the confidence in pupils to discuss other strategies and methods to working out a problem.
- A strong number sense to calculate mentally and efficiently.
- A fluent recall of times table facts and number bonds.
- Quick and efficient recall of facts and procedures.

The content of our mathematics curriculum

Our mathematics curriculum primarily focuses on developing children's fluency, problem solving and reasoning, including knowledge and vocabulary, by building on prior learning and ensuring that progression of these skills is evident as children move through the key stages.

Years 1-6 use the White Rose Maths scheme of learning and small steps as a tool to support our mastery approach. This has been implemented into our own long-term plan for maths outlining the small steps of progression.

We believe that pupils should develop a deep understanding of Mathematical concepts and therefore may spend longer on some concepts if required. Consequently, we have developed medium term plans to steer teachers towards consistency in carrying out the scheme of learning and to map out the small steps of progression to ensure coverage and the required elements are embedded.

These medium-term plans give an overview of what the children will learn in the unit and how this learning builds on what they have been previously taught and how it prepares them for the future learning. They also show how this learning meets the Ready to Progress criteria and help teachers to prioritise key content. In addition, they outline the methods that are to be taught and the core representations to achieve this and also include the key problem-solving focus for each lesson. The MTPs provide a smooth path to proficiency, supported with consistent language and routines but teachers are encouraged to adapt lesson PowerPoints in response to the needs of their classes. Although we follow the White Rose steps and use some of their resources, we tailor our maths lessons to suit the needs of our class therefore our books show a range of resources and activities from elsewhere such as third space learning, NCETM mastery PD materials and Gareth Metcalfe's maths resources.

Gaps in learning are prevented through carefully sequenced 'small steps' of learning which allow children to build upon prior knowledge. Pupil understanding is assessed within the lesson so that same-day intervention called "immediate catchup" is in place to support learning, with additional practice where needed. Those pupils who grasp the concepts more quickly are given opportunities to deepen their understanding and improve their reasoning skills.

Calculation Policy

All pupils are entitled to a broad mathematics curriculum in which their learning needs are identified and met. The calculation policy shows the progression in calculation (addition, subtraction, multiplication and division) and how this works in line with the National Curriculum. It ensures continuity, progression, and gradual development through the four operations from concrete through to formal written methods. The use of concrete, pictorial, abstract approach to lessons ensures all children can access the mathematical concept at their learning pace. The consistent use of the CPA (concrete, pictorial, abstract) approach helps children develop mastery across all the operations in an efficient and reliable way and sets out how pupils will learn procedural knowledge in a logical way. This approach prioritizes pupils developing an understanding of mathematical ideas: understanding the concepts behind the procedures. As their conceptual understanding develops, they will progress onto more formal written methods.

Lesson Structure

All teachers plan daily mathematics lessons following the MTPs. Short term plans on the power points include the explicit teach, key vocabulary, sentence stems and core representation. Our problem-solving approach involves first the teacher modelling how to solve a problem, collectively solving a similar problem as a class

and then children applying this to independently solve a similar problem by themselves. We ensure that children can use a range of methods to calculate and can check whether their chosen methods are appropriate, reliable and efficient. Fluency, problem solving and reasoning is embedded in every lesson and tasks are carefully considered to build on previous steps and link learning.

The 'hook' is an integral part of lessons, whereby the whole class has opportunities to reason mathematically at their ability, discuss efficient and different ways of working out a problem and use the correct mathematical vocabulary. Doing this frequently allows for building their confidence and ability in reasoning; exposure to seeing problems presented in different ways; exposure to more links with other areas of maths and allows for discussion of most efficient strategies. Through quality teaching and resources, the staff at St Mary's are committed to enabling children to progress through the subject, building connection and links with other areas of maths. Problems not only in the hook, but in the main part of the lesson too are carefully selected to make links with other areas of maths to help pupils to become proficient in mathematics. Children also complete Flash back fours daily to revisit previous learning.

Mastering Number

In EYFS (Reception Class), our priority is building a secure number sense and a deep understanding of numbers to 10. Subitising is where pupils instantly recognise numbers of objects without counting them e.g. the dots on a dice or on dominoes.

We follow NCETM's Mastering Number scheme, which provides a clear progression and opportunities for pupils to explore the composition of numbers. This in-depth knowledge of number will support pupils as they move onto early calculation strategies.

In KS1, we build upon the number sense they have developed in EYFS – progressively applying this to mental calculation strategies. Although Years 1 and 2 follow the White Rose Maths Curriculum, pupils also complete additional 10-minute Mastering Number sessions each week.

Recall, facts and procedural methods.

At St Mary's procedural methods are revisited so they can be recalled once the concept has been taught and understood. Counting progression is outlined on our progression grids and the key facts in the lessons are outlined on the MTPs to help pupils learn mathematics facts to automaticity. The Key Instant Recall of Facts progression grid outlines the facts from EYFS- Y6 that the children will learn to automaticity. Arithmetic sessions each week focus on developing automaticity in using efficient and formal methods.

Times tables

At St Mary's we use the online programme times table rock stars to develop recall and fluency in the times tables. This is a fun and engaging way for children to develop their times table and has proven effective in boosting their timestable recall and fluency. Children complete practice sheets 3x a week. The question-based games automatically adapt to each child's unique learning needs, helping them to recall their times tables in record speed.

Any children not progressing will be given extra support with the times tables as an intervention and progress is monitored by the class teacher and subject leader.

Assessment

- In EYFS, children are assessed in their early maths development against the Early Learning Goals

Assessment

- Children in Years 2 and 6 take end of Key Stage national tests.
- Pixl maths tests are completed termly in years 1 – 5.
- White Rose end of block assessments are completed at the end of a unit.
- Formative assessment happens daily in lessons and children who need extra support have same day intervention.
- Live marking' ensures teachers are able to monitor pupils progress during sessions and that any misconceptions can be addressed quickly and effectively.
- Quality questioning and prior learning strategies also take place regularly.

Monitoring and Review

Monitoring of the standards of the children's work and of the quality of teaching in mathematics is the responsibility of the mathematics subject leader. The work of the mathematics subject leader also involves supporting colleagues in the teaching of mathematics, being informed about current developments in the subject, and providing a strategic lead and direction for the subject in the school. The mathematics subject leader designs the yearly subject action plan which is the key driver for improvement.

Meeting the needs of all pupils

Positive attitudes towards mathematics are encouraged, so that all children, regardless of race, gender, ability or special needs, including those for who English is a second language, develop an enjoyment and confidence in mathematics. The aim is to ensure that all children make progress and gain positively from mathematics

lessons. Targeted questioning is used in lessons to support children's understanding and progress. Adaptations are made in lessons to ensure children with SEN can access the same lesson and that the mastery approach is consistently embedded.

Opportunities

In addition to providing our children with an exciting and bespoke maths curriculum, we ensure there are wider opportunities for maths.

- TT rockstars whole school competitions.
- Experiences delivered by external agencies.