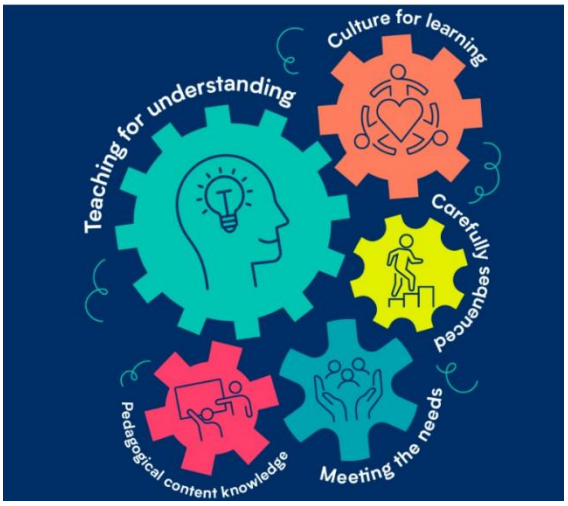
How we teach core subjects

Maths

At St. Peter's, we use a Mastery approach to teaching maths in every Key Stage; from Early Years to Year 6.
Mathematics Mastery places emphasis on the cumulative mastery of essential knowledge and skills in mathematics. It embeds a deeper understanding of maths by utilising a concrete, pictorial, abstract approach.

Subject approach

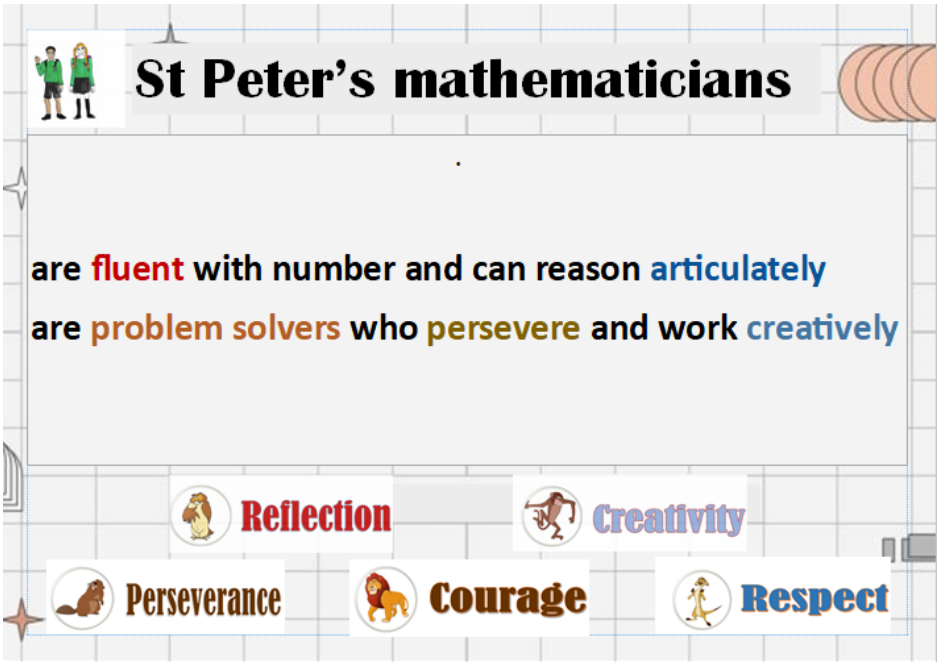


The outcomes of the national curriculum are achieved through our mastery maths curriculum. We use a scheme of work called White Rose Maths to ensure teaching for mastery throughout our school. This is a research-driven teaching and learning method that supports all pupils to meet the goals of the National Curriculum.

What does it mean in practice? In summary, a mastery approach…

Puts numbers first: The scheme has number at its heart, because we believe confidence with numbers is the first step to competency in the curriculum as a whole.
Puts depth before breadth: we reinforce knowledge again and again.
Encourages collaboration: children can progress through the schemes as a group, supporting each other as they learn.
Focuses on fluency, reasoning and problem solving: it gives children the skills they need to become competent mathematicians.

Our vision is to ensure that all pupils have the knowledge to think mathematically so they become fluent in the fundamentals of mathematics through conceptual knowledge and an ability to recall and apply their confidence with numbers rapidly and accurately.



Vision Concepts:

Our vision concepts spiral throughout our curriculum so St Peter's children have a range of opportunities to apply what they have learnt in meaningful contexts and live out our school values, develop spiritually and explore their own beliefs

Implementing the White Rose mastery scheme helps to further develop our curriculums vision concepts.

Community

The concept that we have a responsibility as a Christian community to learn about, understand and love others in our school, village, nation and the world

Christian Values

The concept that if we live by our distinctively Christian values and can demonstrate the qualities of our learning friends we will be equipped as lifelong learners

Ambition

The concept that we should use our knowledge and skills to improve the lives of ourselves and others

Community is developed through the schemes structure which **Encourages collaboration:** children can progress through the schemes as a group, supporting each other as they learn.

Christian Values are not only integral to our vision for maths but are also further developed through the **Focuses on fluency, reasoning and problem solving:** it gives children the skills they need to become competent mathematicians who demonstrate courage, creativity and perseverance.

Ambition is nurtured as our pupils learn to use knowledge and skills in a scheme that **Puts depth before breadth:** we reinforce knowledge again and again. This approach ensures robust development of mathematical thinking and fluency.

Small Steps Progression

Each subject concept has progression indicators called small steps. The small steps outline what intended knowledge pupils should attain during each milestone. We refer to the substantive knowledge as 'I know' knowledge and disciplinary knowledge as 'I can' knowledge.

At St. Peter's, we follow the White Rose Scheme of Learning which outlines the small steps needed to follow, in order to cover the National Curriculum for mathematics.

Working Walls

Working Walls include:

- The unit of learning being covered (e.g. Place Value to 20)
- Key vocabulary
- Modelled examples

Working walls will be used to contain active and immediate learning across the week. It builds on what is being learnt overall, with a primary focus to develop fluency. Key facts are put on the wall at the beginning of the unit of learning, and then built upon, with modelling/vocabulary and stem sentences being constructed with the pupils during the sessions.

Daily Fluency Practice

Efficient, accurate recall of key number facts and procedures is essential for fluency, freeing pupils' minds to think deeply about concepts and problems. It also requires pupils to have the flexibility to move between different contexts and representations of mathematics, to recognise relationships and make connections, and to choose appropriate methods and strategies to solve problems. (NCETM)

Daily Fluency Practice includes:

- Flash-back Fours
- Fluency tailored into WR lessons
- Selected Numbots activities based on Additive Fact heatmaps
- Selected TTRS activities based on TTRS heatmaps
- Additional, selected fluency activities at the start or end of a lesson, where needs have been identified from assessment in a session.

Daily fluency practice recaps on previous learning, and is 'intelligent practice' where specific and careful selections have been made based on knowledge and needs of the children.

The CPA approach

Carefully selected concrete resources are available in every lesson.

- Carefully selected concrete resources and pictorial representations are modelled explicitly in each session.
- The CPA approach is used from reception throughout the school; allowing children to strongly visualise and deepen their understanding of mathematical concepts in line with a small-steps approach.

Vocabulary

Children are explicitly taught key vocabulary for the mathematical concept identified in the School calculations policy glossaries.

Vocabulary is modelled and practices through the use of sentence stems and generalisations.

Each lesson provides planned opportunities for talk and articulation where correct vocabulary is used.

Glossary

Addend - A number to be added to another.

Aggregation - combining two or more quantities or measures to find a total.

Augmentation - increasing a quantity or measure by another quantity.

Commutative – numbers can be added in any order.

Complement – in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

Difference – the numerical difference between two numbers is found by comparing the quantity in each group.

Exchange – Change a number or expression for another of an equal value.

Minuend – A quantity or number from which another is subtracted.

Partitioning – Splitting a number into its component parts.

Reduction – Subtraction as take away.

Subitise – Instantly recognise the number of objects in a small group without needing to count.

Subtrahend - A number to be subtracted from another.

Sum - The result of an addition.

Total – The aggregate or the sum found by addition.

Glossary

Array – An ordered collection of counters, cubes or other item in rows and columns.

Commutative – Numbers can be multiplied in any order.

Dividend – In division, the number that is divided.

Divisor – In division, the number by which another is divided.

Exchange – Change a number or expression for another of an equal value.

Factor – A number that multiplies with another to make a product.

Partitioning – Splitting a number into its component parts.

Product – The result of multiplying one number by another.

Quotient – The result of a division

Remainder – The amount left over after a division when the divisor is not a factor of the dividend.

Scaling – Enlarging or reducing a number by a given amount, called the scale factor

Presentation

St Peter's fosters a culture of pride in a reflective learning process, and so:

- Children maintain a high standard of presentation and care of their maths work
- Jottings/workings are shown in a clear and systematic way for every small step
- Jottings/workings/full stem sentences are used alongside the 'you-do' or 'show what you know' worksheets to demonstrate creative problems-solving and articulation of thinking processes.
- Children self-mark their work, with teacher guidance, clearly with a red pen at the end of the session. This allows children to be more involved in the learning process for each small step.
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Depth of Questioning

- Why?
- How do you know?
- Prove . . .
- Explain . . .
- Show me using . . .

Probing questions are used to expose pupil's thinking, and develop the expectation that children will be expected to look for similarities, difference and patterns when exploring mathematical concepts.

Assessment

At the end of each small step, children will use the 'you-do' worksheet independently. These will be marked by the children with teacher guidance; allowing opportunities to discuss any misconceptions and identify next steps for learning.

At the end of each subject concept, using the White Rose assessments 'Show what you know' will cover fluency and reasoning questions to assess and identify strengths or any gaps in understanding of a mathematical concept, and to flexibly adapt their teaching to support the children before moving on to the next subject concept. These are marked by the children, with teacher guidance, and are evidenced in their maths books showing progress in the small steps.

Attainment in maths is robustly assessed using termly NTS papers. This ensures we are able to track progress across each year of primary school. Using standardised scores and national comparisons keep us focused on the expected progress children should be making against the national curriculum and not just our chosen scheme of work. External moderations also ensure that the judgements we make against teacher assessment frameworks are accurate.