Maths Curriculum

Intent

At St. Paul's, we have crafted a dynamic and inspiring mathematics curriculum designed to ignite curiosity, foster excitement, and cultivate a deep passion for the subject. Our approach is rooted in guiding students through incremental learning steps, empowering them to grow into confident and proficient mathematicians. By focusing on a strong foundation in core mathematical principles, we nurture fluency while enhancing our pupils' ability to communicate mathematical ideas with clarity and precision.

Our curriculum is thoughtfully structured to reinforce and build on prior learning, ensuring that new knowledge is securely anchored in long-term memory. Continuous practice and application of skills are central to this process, allowing students to solidify their understanding. By encouraging them to draw on past experiences, we help students grasp new concepts more effectively, deepening their overall comprehension of mathematics.

We place a strong emphasis on developing resilience and adaptability, recognizing that facing challenges and persevering through difficulties is a vital aspect of learning. Our curriculum is designed to encourage children to make meaningful connections between mathematics and the world around them, uncovering the patterns and relationships that link mathematics to everyday life.

At St. Paul's, we are dedicated to preparing our students not only for their next academic steps but for the diverse challenges they will encounter throughout life. Our goal is to ensure that when our pupils leave us, they are not only academically prepared but also carry with them a lasting appreciation for mathematics and a profound understanding of its significance in both their daily lives and the broader world.

Implementation

At St. Paul's, the Mathematics curriculum is a blend of mastery and spiral approaches, ensuring a clear and progressive development of skills in our students' learning journey. We adhere to many mastery principles as outlined by the National Centre for Excellence in Teaching Mathematics (NCETM), such as dedicating ample time to topics for in-depth understanding, fostering connections, and maintaining the class focus on the same topic. We believe that with effort, all pupils are capable of excelling in mathematics.

However, we recognise that mastery of a topic is a process that will take time. To truly develop a deep understanding, pupils need to encounter mathematical concepts repeatedly, in varying contexts and across different academic years. Therefore, our curriculum incorporates the revisiting and reinforcing elements of a spiral curriculum.

Our commitment to providing a high-quality Mathematics curriculum is grounded in the latest research and pedagogical recommendations. The curriculum is built around the NCETM's five key mastery principles:

Coherence: Lessons are structured in small, connected steps, unfolding concepts in a way that is accessible to all children. This approach leads to a generalized understanding and the ability to apply concepts in various contexts.

Representation and Structure: We use representations in lessons to reveal the mathematical structure being taught, aiming for pupils to understand and perform mathematical operations independently of these representations.

Mathematical Thinking: We emphasize deep understanding, encouraging pupils to engage thoughtfully with mathematical ideas through reasoning and discussion.

Fluency: Our curriculum develops number sense, allowing pupils to choose appropriate methods for tasks and apply skills in multiple contexts, alongside quick and efficient recall of facts and procedures.

Variation: Both conceptual and procedural variations are used to foster a comprehensive understanding of concepts. This involves multiple representations to highlight critical aspects and to help pupils recognize what changes and what stays the same, thus understanding mathematical relationships and structures.

Our approach to implementation includes quality first teaching, delivering work that is appropriately challenging for every pupil. We utilise a variety of mathematical resources such as Numicon, Base10, and counters for concrete understanding, followed by pictorial representations and finally abstract applications.

Creating a vocabulary-rich environment is key in our approach, where mathematical discussions are a primary learning tool. Pre-teaching vocabulary aids in understanding and boosts confidence in mathematical explanations.

We actively address potential misconceptions within lessons, using them as teachable moments. For some students, pre-teaching groups provide additional support, building confidence in new concepts. Prompt intervention is provided for those who find certain concepts challenging.

To reinforce learning and maintain rapid mental recall, all pupils from EYFS to Y6 engage in mental mathematics and number fluency outside regular Mathematics lessons. We also offer additional fluency lessons in school, supported by our own fluency progression ladders. These lessons focus on developing arithmetic skills and enhancing number fluency. Furthermore, all children have access to online resources for home practice, supporting their mental arithmetic and number fact fluency.

Our curriculum is continuously informed and guided by the principles and resources provided by the NCETM. Additionally, we employ strategies like same-day intervention and precision teaching to address individual learning needs promptly and effectively. This holistic approach ensures that our pupils are not only prepared for their academic journey but are also confident and competent mathematicians.

Impact

The implementation of our Mathematics curriculum, rooted in the principles of mastery and spiral learning, is having a significant and positive impact on the educational outcomes and experiences of our pupils.

1. Enhanced Understanding and Mastery: By spending extended time on each topic and revisiting concepts in different contexts over time, our pupils have developed a deeper and more comprehensive understanding of mathematical principles. This approach has led to a noticeable improvement in their ability to grasp complex concepts and apply them confidently in various situations.

2. Increased Student Engagement and Confidence: The use of concrete, pictorial, and abstract methods, along with a vocabulary-rich environment, has greatly increased student engagement and confidence in Mathematics. Pupils are now more comfortable with mathematical discussions and are better equipped to articulate their understanding, which is evident in both their oral and written communications.

3. Improved Mathematical Thinking and Problem-Solving Skills: The focus on coherence, representation, and structure within the curriculum has enhanced pupils' mathematical thinking and

problem-solving abilities. They are now more adept at recognising patterns, making connections, and employing various strategies to solve problems, demonstrating a higher level of mathematical maturity.

4. Fluency in Basic Mathematical Skills: Our emphasis on fluency and the integration of additional fluency lessons have led to a marked improvement in pupils' speed and accuracy in basic mathematical operations. This fluency has also supported their ability to tackle more complex mathematical challenges efficiently.

5. Positive Attitude Towards Mathematics: The curriculum's focus on resilience, adaptability, and the understanding that struggle is a part of learning has fostered a more positive attitude towards Mathematics among our pupils. They are more willing to take on challenges and less likely to be discouraged by difficulties.

6.Targeted Support and Rapid Progress: The implementation of same-day intervention and precision teaching has provided targeted support to pupils who need it, leading to more rapid progress and lessening gaps in understanding.

7. Broader Application of Mathematical Skills: Pupils are now better able to relate their mathematical learning to real-life situations, demonstrating the practical application of their skills. This not only enhances their understanding of the subject but also highlights the relevance of Mathematics in their everyday lives.

Overall, the implementation of our Mathematics curriculum is leading to significant improvements in pupils' mathematical abilities, confidence, and attitudes towards the subject. The structured approach, combined with the emphasis on deep understanding and practical application, is preparing our pupils to be proficient and enthusiastic mathematicians, ready for the challenges of their future academic endeavours and beyond.

Curriculum Overview

Mathematics

Year Group	Autumn	Spring	Summer
Nursery	Number Songs Colours Match and sort Comparing amounts Comparing size, mass and capacity Simple patterns	Number and Place Value. Representing, Exploring and Understanding Numbers to 5 Length and Height	Properties of basic shapes Time - My day Capacity and weight Positional language
Reception	Getting to know you Match and sort, compare amounts (2) Compare size, mass and capacity (2) Exploring Pattern Representing 1,2 and 3 Comparing 1,2 and 3 Composition of 1,2 and 3 Circles, Triangles and shapes with 4 sides Positional Language (2) and Time Representing numbers to 5 One more and one less (2)	Introducing 0 Comparing numbers to 5 Composition of numbers to 5 Compare Mass Compare Capacity 6,7 and 8 Combining two amounts Making Pairs Length and Height (2) Counting to 9 and 10 Comparing numbers to 10 Bonds to 10 3D shapes Spatial Awareness Patterns	Building numbers beyond 10 Counting patterns beyond 10 Spatial Reasoning (1) Match, rotate, manipulate Adding more Taking away Spatial Reasoning (2) Compose and Decompose Doubling Sharing and Grouping Even and Odd Spatial Reasoning (3) Visualise and Build Deeping understanding, patterns and relationships Spatial reasoning (4) Mapping

Year Group	Autumn	Spring	Summer
1	Building on Reception experiences and counting within 100 Comparison of quantities and part-whole relationships Numbers 0-5 Recognise, compose, decompose and manipulate 2D and 3D shapes	Recognise, compose, decompose and manipulate 2D and 3D shapes Numbers 0-10 Additive structures Addition and Subtraction facts within 10 Length and Height Statistics	Numbers 0-20 Unitising and coin recognition Multiplication and Division Position and Direction Fractions Time Weight and Volume
2	Numbers 10-100 Calculations within 20 Fluently add and subtract within 10 Addition and Subtraction of 2-digit numbers (1) Shape Position and Direction	Introduction to Multiplication Introduction to division structures Sense of measure – capacity, volume, mass Fractions Time	Addition and Subtraction of two- digit numbers (2) Multiplication and division – doubling, halving, quotative and partitive division Statistics Money
3	Numbers to 1000 Adding and Subtracting across 10 2, 4, 8 times tables and related division facts	Right Angles Manipulating the additive relationship and securing mental calculation Column Addition 3x table and related division facts Column Subtraction Statistics	Unit fractions Non-Unit Fractions Money Parallel and perpendicular sides in polygons Length and Perimeter Time 3D Shape Properties

Year Group	Autumn	Spring	Summer
4	Review of Column Addition and Subtraction Numbers to 10,000 Perimeter and introduce area 3, 6, 9 multiplication tables and related division facts Statistics Time (1)	12 x table and related division facts 7 x table patterns and related division facts Time (2) Understanding and manipulating multiplicative relationships Review of fractions (1)	Review of fractions (2) 11 x table and related division facts Fractions greater than 1 Decimals Symmetry in 2D shapes and angles Division with remainders Co-ordinates Conversion of measures
5	Place Value- decimal fractions Written methods- Addition and subtraction Money Angles Negative Numbers Written methods- multiplication and division Transformations	Calculating with decimal fractions Factors, multiples and primes Statistics Fractions Area and scaling	Fractions and percentages 3D Shapes Converting Units Volume
6	Calculating using knowledge of structures (1) Multiples of 1000 Numbers up to 10,000,000	Multiplication and Division (2) Area, perimeter and volume Order of operations	Ratio and Proportion Calculating using knowledge of structures (2) Algebra

	Multiplication and Division (1) Draw Compose and Decompose Shapes	Position and direction Fraction, decimals and percentages Statistics Mean average. Conversion of Measures	Solving problems with two unknowns Themed mathematical projects, consolidation, and progression to KS3