God's Love in Action

Our children are at the heart of everything we do through **Christian values and relationships**. **Living and learning together** we celebrate the uniqueness and diversity of everyone in our family. We nurture a sense of **self belief, mutual respect and belonging** through Social Emotional Learning and academic excellence. We are dedicated to building the foundations for **happy and successful life-long learning**.

Maths

Intent

Contents

1. Curriculum Vision

We use maths in every aspect of our lives, whether that is at work, at home, or even beyond. Maths is used when we go shopping, plan a holiday, decide on a mortgage, or bake a tasty treat following a recipe. Mathematics is an important skill that helps us to understand the world that we live in.

At St John's and St Peter's CE Academy, we want to support all our children to believe in their own Maths ability and be equipped with the skills to become confident and able mathematicians who enjoy mathematical challenge. Maths at our school is not just about teaching the content, but about developing thinking skills that apply to the wider world.

We recognise that fluency is the first step in becoming a successful mathematician. The National Curriculum states that pupils will: become fluent in the fundamentals of mathematics so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately. In short, pupils should have a secure understanding of mathematical facts to apply to their learning.

Beyond that, reasoning in maths is the application of logical thinking to make sense of an idea: it enables children to make use of all their other mathematical sense. Problem solving requires children to think strategically, deciding which steps to take to solve a problem. However, mathematical problems can be presented in a range of ways, not just through wording, and during maths lessons, children develop the strategies to be able to understand problems, decide on a starting point, decide the existing skills they have which they will need to use to solve it, and how to represent their calculations.

Most importantly, we want our children to love maths. We want to break the negative preconceptions often attached to maths that it is a thing you can or can't do. Our aim is to equip all pupils with the knowledge and skills they need to overcome obstacles and therefore achieve their full potential in mathematics and beyond.

2. Curriculum Aims

Our aim is for young mathematicians to become:

- Confident and able to recall and apply mathematical knowledge in different contexts
- Able to explain their methods and thinking processes and apply skills in context
- Fluent in different areas of maths
- Efficient in applying problem-solving and reasoning skills
- Independent thinkers

Through our high-quality maths provision, we aim for children to:

- Have a sense of the size of a number and where it fits into the number system.
- Know by heart number facts, such as number bonds, multiplication tables.
- Use what they know by heart to figure out answers mentally.

- Calculate accurately and efficiently, both mentally and with pencil and paper, drawing on a range of calculation strategies.
- Make sense of number problems, including non-routine problems, and recognise the operations needed to solve them.
- Explain their methods and reasoning, using correct mathematical terms.
- Judge whether their answers are reasonable and have strategies for checking them where necessary.
- Suggest suitable units for measuring and make sensible estimates of measurements.
- Explain and make predictions from the numbers in graphs, diagrams, charts and tables.

3. National Curriculum

Purpose of study

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.

Aims

The national curriculum for mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
- reason 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 nonroutine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions.

Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. The programmes of study are, by necessity, organised into apparently distinct domains, but pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.The expectation is that the majority of pupils will move through the programmes of study at broadly the same pace. However, decisions about when to progress should always be based on the security of pupils' understanding and their readiness to progress to the next stage. Pupils who grasp concepts rapidly should be challenged through being offered rich and sophisticated problems before any acceleration through new content. Those who are not sufficiently fluent with earlier material should consolidate their understanding, including through additional practice, before moving on.

4. Why study Maths in this way?

a) Why has this knowledge been selected?

At St John's and St Peter's CE Academy, we use a mastery approach to teach maths. A Mastery approach to mathematics is characterised by the belief that, by working hard, all children are capable of succeeding in mathematics. Our White Rose Maths curriculum is designed to provide students with a solid foundation in mathematics. Students will gain a deep understanding of mathematics and enjoy solving mathematical problems. The primary curriculum puts a significant emphasis on mathematical skills, therefore our curriculum content is well sequenced in order to promote a depth of understanding. Our White Rose Scheme breaks down maths concepts one by one (small steps), allowing teachers to cover them in depth before moving on to a new one, giving pupils greater chance to embed and retain knowledge. A step-by-step approach to maths is critical to learning and embedding knowledge effectively.

The content of our maths lessons is closely aligned with the maths national curriculum and the DFE's ready-to-progress criteria. In KS1, the focus is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. For this reason, both year groups start with Place Value and move onto Addition and Subtraction. For Year 1, this starts within 10, and progresses through to numbers up to 50 in the spring term. Number and place value are critical in developing reasoning and problem-solving skills that are necessary for children to apply mathematical concepts. The other units covered in Year 1 and 2 take into account the statutory and non-statutory requirements of the national curriculum, including position and direction, and properties of shape.

In lower key stage two, the focus is on ensuring that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. Again, both Year 3 and 4 begin with a unit on Place Value, directly revisiting previous year's work and also building in knowledge of thousands and tens of thousands. After Place Value, students spend a significant amount of time mastering written and mental methods of addition, subtraction, multiplication and division. To support children with their times tables and quick recall number facts, we also use the online platforms Times Table Rockstars and Numbots. These have had a significant impact on pupil engagement and promoting fluency. As the breadth of knowledge that the children learn increases, more time is given to newer concepts such as fractions and decimals. The other units covered in Year 3 and 4 take into account the statutory and non-statutory requirements of the national curriculum as well as the ready-to-progress criteria.

Finally, in upper key stage two, the focus of our mathematics teaching is ensuring that pupils extend their understanding of the number system and place value, allowing them to make connections between multiplication and division, decimals, percentages and ratio. As pupils should be fluent in written methods for all four operations and able to work with fractions, decimals and percentages, number is the focus and priority. However, careful consideration has been given to ensure that children spend a significant proportion of time on geometry, measurement and statistics as well. In addition, our Year 6 curriculum includes frequent opportunities for revision across KS2 knowledge, preparing children for the End of Key Stage 2 assessments.

b) Why is it taught in this order?

To learn mathematics effectively, some things have to be learned before others, e.g. place value needs to be understood before working with addition and subtraction, addition needs to be learnt before looking at multiplication (as a model of repeated addition). Our White Rose Maths Scheme is a cumulative curriculum, so that once a topic is covered, it is met many times again in other contexts. For example, in every year group, place value is always covered in Autumn 1, but revisited within addition and subtraction, multiplication and division etc.

Each year begins with an emphasis on number skills first, moving on to other carefully ordered units. For some other topics, the order isn't as crucial, e.g. Shapes and Statistics need to come after number, but don't depend on each other. We try to mix these so pupils have as wide a variety of mathematical experiences as possible in each term and year.

Because it does not matter whether stand-alone units such as Angles or Statistics are taught before or after each other (they all have some dependency e.g. on number, if not on each other), blocks have been organised to give as varied a curriculum as possible. It has also been designed in a way that avoids one topic always being taught at the same point in the year (e.g. last block of Summer 2), to minimise the chance of something not being covered.

Below are 2 examples of what order units are taught in different year groups:

Year 1 Maths Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number **Place Value** (within 10)					Number **Addition and Subtraction** (within 10)					Geometry **Shape**	Consolidation
Spring	Number **Place Value** (within 20)			Number **Addition and Subtraction** (within 20)			Number **Place Value** (within 50)		Measurement **Length and height**		Measurement **Mass and volume**	
Summer	Number **Multiplication and division**			Number **Fractions**		Geometry **Position and direction**	Number **Place Value** (within 100)		Measurement **Money**	Measurement **Time**		Consolidation

Year 4 Maths Overview

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week 10	Week 11	Week 12
Autumn	Number Place Value				Number Addition and Subtraction			Measurement Area	Number Multiplication and division A			Consolidation
Spring	Number Multiplication and division B				Measurement Length and perimeter		Number Fractions			Number Decimals A		
Summer	Number Decimals B		Measurement Money		Measurement Time		Consolidation	Geometry Shape		Statistics	Geometry Position and direction	

c) How are Maths lessons taught at St John's?

Mathematics happens daily for 1 hour and is taught predominantly by the class teacher. Maths lessons take place in the morning and follow a consistent 6-part structure from Year 1 to Year 6. The six parts are: Do Now, New Learning, Model, Check for Understanding, Independent Application and Feedback. All classes (including Reception) use the White Rose Schemes of Work as a basis for planning and teaching, but adapt the materials to suit the needs of their pupils. Teachers also supplement the White Rose Curriculum lessons with other resources such as Timestable Rockstars (digital learning platform), Numbots (digital learning platform), Flashback 4 (retrieval activity), and other materials they find and put together.

During lessons, children are supported by having the opportunity to make use of a range of resources, ensuring concrete, pictorial and abstract methods are accessible to all. As children move through the school, they transition away from concrete resources to prepare them for the application of maths in the real world, however, these resources are available and are used as scaffolding where needed.

Concrete – Students should have the opportunity to use concrete objects and manipulatives (for example, cubes or base ten) to help them understand and explain what they are exploring.

Pictorial – Students should then build on this concrete approach by using pictorial representations (for example the bar model to represent addition or subtraction). These representations can then be used to reason and solve problems.

Abstract – With the foundations firmly laid, students should be able to move to an abstract approach using numbers and key concepts with confidence (for example, formal written methods).

A fundamental part of our maths lesson is the modelling handover, often using the 'I do, We do, You do' structure. This involves showing students how to perform a task or a skill, breaking it down into steps so they can learn to do it themselves. An extended period of handover reduces cognitive load, supporting pupils to build connections between new and prior knowledge. During the 'We Do' element, teachers and students co-construct responses before students attempt tasks independently.