'Love one another as Jesus loved us' (John 13 v 34-35)

Maths at St Mary's CE Primary School

Maths Curriculum Rationale

At St Mary's CE we are mathematicians! We want the children at our school to love maths. We want our children to aim high, be ambitious and grow up wanting to be engineers, surveyors, teachers, data analysts and financial managers. Our vision at St. Mary's CE Primary School is to encourage and nurture the growth of every individual and their uniqueness, so that all flourish and become all that they can be and all that God made them to be.

The maths curriculum has been carefully designed and sequenced so that our children develop their maths capital. We want our children to understand the importance of maths, how it is a part of so many aspects of life and why a sound mathematical knowledge is important for them in the future. We want our children to remember their maths lessons in our school, embrace the mathematical opportunities they are presented with and apply their knowledge in lessons for other subjects! When World Maths Day was celebrated in school, children were able to appreciate the many aspects of maths in the world around them and participate in an online competition with children around the world. Children were challenged during 'Barvember'to a daily maths problem to reinforce their understanding of bar models as an aid to problem solving. Bringing maths alive is important at St Mary's CE Primary School.

Curriculum Intent

The maths curriculum is ambitious – as are all curriculum areas- and allows our children to become independent and resilient. The maths curriculum provides challenges which enables children's understanding of mathematical concepts to go deeper.
We want to equip our pupils with all the statutory requirements of the Maths National Curriculum and also prepare them for the opportunities, responsibilities and experiences in the next stage of their education and beyond.
We want our children to learn from other cultures, respect diversity, co-operate with one another and appreciate what they have. We achieve this by providing a strong SMSC curriculum, with British Values and our core values placed at the heart of everything we do. This often feeds into the maths curriculum. We celebrate innovation and the freedom of choice that British Society represents and as a result our pupils are encouraged to become free thinkers, with ambitious ideas. The children know that in maths there may be more than one strategy that can be used to solve a problem. They are encouraged to approach and solve problems, choosing their own efficient method and are given opportunities to share their thinking with others. We encourage children's individuality, belief in their ideas and the understanding that they can learn from mistakes.
We enrich their time in our school with memorable, unforgettable experiences and opportunities to engage and intrigue our children. Examples of such experiences are when Year 5 made pizzas and raised money for charity and Year 4 used their maths knowledge to make biscuits in Design and Technology.

We want our children to have a secure understanding of all the elements within the main areas of maths and the different skills and knowledge within them. Children are given opportunities to discuss their

learning and ask questions to further their understanding. Learning in maths is often reinforced in other subjects, for example, in Reception, children have measured plants which they have grown in science; in Year 2, children have conducted a survey about holiday resorts visited (geography) to apply their skills linking to data handling; Year 5 have used spreadsheets (computing) to create formula to convert measures.

Curriculum Implementation

The implementation of the objectives from the Maths National Curriculum is structured around White Rose Maths. The learning for each year group is blocked into units across the year, with between 3 and 5 blocks being taught each term. Each block is composed of between one and five weeks of learning. Each block is broken down into small progressive steps which form the main learning challenge for each lesson.

Staff in every class teach a daily maths lesson. Within the daily maths lessons, children develop their mathematical knowledge, fluency, problem solving and reasoning skills. Whilst the White Rose 'small steps' form the structure of the maths curriculum, teachers use a variety of activities from a range of resources to support children's learning in each 'small step', for example, 'Learning by Questions' activities, White Rose resources, Times Tables Rock Stars, 'Talk It, Solve It' activities.

Children are taught using the concrete, pictorial and abstract model, as illustrated in the school maths policy. The amount of time spent at each of these stages will vary with the age of the class and the needs of the individual.

The assessment points and milestones reflect the key learning required in each year group. This will ensure the way maths is taught throughout our school follows a consistent structure.

With the reviewed curriculum pupils have the opportunity to develop their fluency in maths, apply their understanding to problem solving and develop their mathematical reasoning. These opportunities are planned for every maths lesson. Maths subject specific characteristics, which we expect all children to demonstrate, underpin all work in maths.

These characteristics are:

- develop an enjoyment of maths
- enable children to become independent, confident and logical thinkers
- enable children to acquire number fluency
- children to have a positive attitude to maths
- build confidence and competence with numbers, geometry, measures, statistics and problem solving
- equip children with the skills necessary to solve mathematical problems
- develop children's ability to reason about mathematics
- apply mathematical knowledge and skills to other subjects and everyday life
- understand and use mathematical vocabulary

Subject Leads have devised whole school subject long-term curriculum plans, which identify when the different subjects and topics will be taught across the school and across the academic year. All subjects are taught discretely but staff make meaningful links across subjects where appropriate. They link prior knowledge to new learning to deepen children's learning. Children have frequent opportunities to revisit and reinforce prior learning, for example, by completing daily flashback activities, regular arithmetic assessments and quizzes. Our children are taught to connect knowledge from prior learning and across subjects.

Medium term plans have been developed and continue to be refined to show the sequence of lessons taught within each topic. These set out the learning challenges for each lesson and closely reference the key learning, vocabulary and progression document.

We believe that by constructing our curriculum this way, we improve the potential for our children to retain what they have been taught, to alter their long-term memory and thus improve the rates of progress they make.

Curriculum Impact

We use both formative and summative assessment information in every maths lesson. Staff use this information to inform their short-term planning and support. This helps us provide the best possible support for all of our pupils, including the more able. The progression document and the assessment points for each year group ensure that knowledge and understanding of mathematical concepts skills are progressive and build year on year.

Staff use Maths formative assessment methods in lessons to systematically assess what the children know and inform their future planning. Formal summative assessments for maths are undertaken once a term.
Short summative assessments are also undertaken at the end of a unit of work.
Assessment information in maths is collected once a term and analysed as part of our monitoring cycle. This process provides an accurate and comprehensive understanding of the quality of education in maths. A comprehensive monitoring cycle is developed at the beginning of each academic year. This identifies when monitoring is undertaken. Monitoring in maths includes: book scrutinies, lesson observations and/or learning walks, pupil/parent and/or staff voice.
All of this information is gathered and reviewed. It is used to inform further curriculum developments and provision is adapted accordingly.

At St Mary's CE Primary School, we are

MATHEMATICIANS!

Maths programmes of study:

Key Stages 1 and 2

Purpose of study

Mathematics is a creative and highly interconnected 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 non-routine 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.

Information and communication technology (ICT)

Calculators should not be used as a substitute for good written and mental arithmetic. They should therefore only be introduced near the end of key stage 2 to support pupils' conceptual understanding and exploration of more complex number problems, if written and mental arithmetic are secure. In both primary and secondary schools, teachers should use their judgement about when ICT tools should be used.

Spoken language

The national curriculum for mathematics reflects the importance of spoken language in pupils' development across the whole curriculum – cognitively, socially and linguistically. The quality and variety of language that pupils hear and speak are key factors in developing their mathematical vocabulary and presenting a mathematical justification, argument or proof. They must be assisted in making their thinking clear to themselves as well as others and teachers should ensure that pupils build secure foundations by using discussion to probe and remedy their misconceptions.

School curriculum

The programmes of study for mathematics are set out year-by-year for key stages 1 and 2. Schools are, however, only required to teach the relevant programme of study by the end of the key stage. Within each key stage, schools therefore have the flexibility to introduce content earlier or later than set out in the programme of study. In addition, schools can introduce key stage content during an earlier key stage, if appropriate. All schools are also required to set out their school curriculum for mathematics on a year-by-year basis and make this information available online.

Attainment targets

By the end of each key stage, pupils are expected to know, apply and understand the matters, skills and processes specified in the relevant programme of study.

Maths National Curriculum