Maths Curriculum Intent Statement – Westacre Middle School

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.

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 at Westacre will aim to 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 are challenged through being offered rich and sophisticated **Deep** 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.

Curriculum Implementation

At Westacre, children study mathematics daily, covering a broad and balanced mathematical curriculum including elements of number, calculation, geometry, measures and statistics. Each year group has two distinctive types of Maths lessons: Regular curricular lessons and R.A.P maths.

Year 5 and Year 6 have an extra arithmetic lesson. In Arithmetic lessons, children focus solely on **fluency skills,** learning and practising mathematical procedures. Each day, we have a 15 minute **R.A.P** Maths lesson. These short lessons give children the opportunity to **R**etrieve and use previously learned knowledge, develop their **A**rithmetic skills and **P**ractice areas of maths of they may find tricky**.** In the remaining curriculum lessons, children learn the new content appropriate to their age band, demonstrating their understanding through a mix of fluency, problem solving and reasoning questions.

At Westacre, a high priority is placed on children being provided with regular opportunities to practice and enhance their retrieval skills. This takes the form of 'Can We Still…' during R.A.P. maths, which aim to test recall of previous maths topics children may not have practiced in a few weeks or months. Each year group tailors this retrieval activity to suit the particular needs of each year group or class.

During maths lessons, children are taught through a Teaching for Mastery approach. This involves the teacher modelling the skill being taught to complete a question ['I DO!'], then children working together with their peers and the teacher ['WE DO!'], and finally children have the opportunity to complete the skill independently ['YOU DO!'].

They then may be broken up into smaller focus groups that provide support both for children who may struggle with fluency of the skill as well as those who may need assistance with a problem solving task. All children would ideally aim to develop their basic maths skills and apply them to different problems and real life situations. They access a variety of different concrete resources to support their learning, and each classroom has several maths toolkits which children are encouraged to dip into whenever they feel it would be beneficial.

Following guidance from the Maths Hub, children are not set for maths. Instead children are taught in their base classes which prevents any 'glass ceiling' to what they can achieve in the subject. Children are both supported and challenged through adaptive teaching so in each lesson, every child can reach their potential. We understand that for a select number of children with additional needs, access to the curriculum can be difficult so a small support group exists in each year group across the school which promotes a strong emphasis on personal progress.

Due to the interconnected nature of mathematics, at Westacre we aim to teach maths in a cross curricular manner as well as discretely to teach the practical application of mathematical skills. We focus not only on the mathematical methods but also focus on mathematical vocabulary and to use Maths Mastery to broaden and deepen mathematical understanding.

We use a range of resources throughout the school to design a bespoke and challenging curriculum that is specific to each child's learning needs.

Upper Key Stage 2

The National Curriculum (2014) for Upper Key Stage 2 states that:

The principal focus of mathematics teaching in upper key stage 2 is to ensure that pupils extend their understanding of the number system and place value to include larger integers. This should develop the connections that pupils make between multiplication and division with fractions, decimals, percentages and ratio.

At this stage, pupils should develop their ability to solve a wider range of problems, including increasingly complex properties of numbers and arithmetic, and problems demanding efficient written and mental methods of calculation. With this foundation in arithmetic, pupils are introduced to the language of algebra as a means for solving a variety of problems. Teaching in geometry and measures should consolidate and extend knowledge developed in number. Teaching should also ensure that pupils classify shapes with increasingly complex geometric properties and that they learn the vocabulary they need to describe them.

By the end of year 6, pupils should be fluent in written methods for all four operations, including long multiplication and division, and in working with fractions, decimals and percentages.

Pupils should read, spell and pronounce mathematical vocabulary correctly.

The National Curriculum for Key Stage 3 can be found here:

https://www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study

Curriculum Impact

Throughout each lesson formative assessment takes place and feedback is given to the children through marking and next step tasks to ensure they are meeting the specific learning objective. Teachers then use this assessment to influence their planning and ensure they are providing a mathematics curriculum that will allow each child to progress. The teaching of maths is also monitored on a termly basis through book scrutinies, learning walks and lesson observations. Each term children from each year complete a summative assessment to help them to develop their testing approach and demonstrate their understanding of the topics covered. CanDoMaths assessments are used across the school with Year 6 also using SATS papers and Year 7 also using White Rose assessments. The results from both the formative assessment and summative assessment is then used to determine children's progress and attainment.

Assessments also inform the areas of focus for R.A.P maths lessons, interventions, classroom seating plans. It is also used to adapt lesson planning where appropriate.

SMSC and Mathematics

Spiritually, developing deep thinking and an ability to question the way in which the world works promotes the spiritual growth of students. Students are encouraged to see the sequences, patterns, symmetry and scale both in the man-made and the natural world and to use maths as a tool to explore it more fully. Morally, students are provided with opportunities to use their maths skills in real life contexts, applying and exploring the skills required in solving various problems, where they may need to analyse data and consider the implications of misleading or biased statistics. Socially, students are always encouraged to explain concepts to each other and support each other in their learning. In this manner, students realise their own strengths and feel a sense of achievement which often boosts confidence. Culturally, various approaches to mathematics from around the world are used and this provides an opportunity to discuss their origins. This includes different multiplication methods from Egypt, Russia and China, Pythagoras' Theorem from Greece, algebra from the Middle East and debates as to where Trigonometry was first used. Students gain an understanding of maths as a universal language that transcends nations and connects us all.