Mathematics

at Morton Church of England Primary School

As mathematicians, children at Morton CEPS will aspire to become self-confident, fluent learners who can apply their maths knowledge to problem solve and reason. Our children recognise the value of these skills both across the curriculum and in the wider world. They will have the confidence and enthusiasm to talk about the subject and explain their thinking, using age-appropriate vocabulary as part of the process. Our children will be encouraged and supported to takes risks with their learning as they become robust and engaged mathematicians who are building a life-long appreciation of the subject.

Mathematics Implementation Statement

Children at Morton CEP School will have a strong foundation of fluency upon which they can build their problem solving and reasoning skills. These fluency skills will run through, and sit side-by-side with, daily maths lessons.

The White Rose curriculum will inform year group long-term and short-term planning for all year groups. KS1 make use of the ncetm Mastering Number scheme to support and develop fundamental understanding of number.

Through regular use of manipulatives, apparatus and pictorial resources, all children will develop a flexible, robust understanding of the subject.

Children will be exposed to high quality, subject specific vocabulary as part of their teaching and learning. They will be encouraged to explain their thinking and articulate their reasoning when working mathematically. All children will have the opportunity to experience ability-appropriate problems and investigations as they apply their understanding and engage with the conceptual foundations of mathematics.

Our use of adaptive teaching practices ensures all learners have scaffolded support to achieve.

Our ambitious curriculum is always under review.

Class teachers use formal, summative and informal, on-going assessment to monitor progress and identify gaps in understanding. This understanding is used to inform teaching and planning and ensure appropriate levels of support and challenge.

Mathematics Impact Statement

Our maths curriculum will prepare children at Morton for problem solving outside the classroom. Children will understand the relevance and importance of what they are learning in relation to real world concepts. Children will know that maths is a vital life skill that they will rely on in many areas of their daily life. They will be able to explain their mathematical thinking with their peers and use appropriate vocabulary. Our children will be able to tackle problems creatively and apply a range of skills in different contexts. As young mathematicians, our children will learn the importance of challenge to build resilience and encourage improvement through reflection and trying again. Children will have a positive view of maths from learning in an environment where maths is promoted as being an exciting and enjoyable subject in which they can investigate and ask questions. As we aspire towards greater depth of understanding and achievement within the subject, children will start to see that maths is simultaneously a tool for solving problems and a language for expressing creativity.

Maths at our school

National Curriculum Expectations

Early Years

Developing a strong grounding in number is essential so that all children develop the necessary building blocks to excel mathematically. Children should be able to count confidently, develop a deep understanding of the numbers to 10, the relationships between them and the patterns within those numbers. By providing frequent and varied opportunities to build and apply this understanding - such as using manipulatives, including small pebbles and tens frames for organising counting - children will develop a secure base of knowledge and vocabulary from which mastery of mathematics is built. In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.

Key Stage 1

The principal focus of mathematics teaching in key stage 1 is to ensure that pupils develop confidence and mental fluency with whole numbers, counting and place value. This should involve working with numerals, words and the four operations, including with practical resources [for example, concrete objects and measuring tools].

At this stage, pupils should develop their ability to recognise, describe, draw, compare and sort different shapes and use the related vocabulary. Teaching should also involve using a range of measures to describe and compare different quantities such as length, mass, capacity/volume, time and money.

By the end of year 2, pupils should know the number bonds to 20 and be precise in using and understanding place value. An emphasis on practice at this early stage will aid fluency.

Pupils should read and spell mathematical vocabulary, at a level consistent with their increasing word reading and spelling knowledge at key stage 1.

Lower Key Stage 2

The principal focus of mathematics teaching in lower key stage 2 is to ensure that pupils become increasingly fluent with whole numbers and the four operations, including number facts and the concept of place value. This should ensure that pupils develop efficient written and mental methods and perform calculations accurately with increasingly large whole numbers.

At this stage, pupils should develop their ability to solve a range of problems, including with simple fractions and decimal place value. Teaching should also ensure that pupils draw with increasing accuracy and develop mathematical reasoning so they can analyse shapes and their properties, and confidently describe the relationships between them. It should ensure that they can use measuring instruments with accuracy and make connections between measure and number.

By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12 multiplication table and show precision and fluency in their work.

Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word reading knowledge and their knowledge of spelling.

Upper Key Stage 2

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.

Our Mathematics Curriculum

	Autumn	Spring	Summer
Reception	Just Like Me It's 1, 2, 3 Light & Dark	Alive in 5 Growing 6, 7, 8 Building 9 & 10	To 20 And Beyond First, Then, Now Find My Pattern On The Move
Year 1	Place Value Addition & Subtraction Geometry	Addition & Subtraction Place Value Length & Height Mass & Volume	Multiplication & Division Fractions Geometry Place Value Money Time
Year 2	Place Value Addition & Subtraction Geometry	Money Multiplication & Division Length & Height Mass, capacity & temperature	Fractions Measurement Statistics Geometry
Year 3	Place Value Addition & Subtraction Multiplication & Division	Multiplication & Division Length & Perimeter Fractions Mass & Capacity	Fractions Money Time Shape Statistics

Year 4	Place Value Addition & Subtraction Area Multiplication & Division	Multiplication & Division Length & Perimeter Fractions Decimals	Decimals Money Time Geometry Statistics Position & Direction
Year 5	Place Value Addition & Subtraction Multiplication & Division Fractions	Multiplication & Division Fractions Decimals & Percentages Perimeter & Area Statistics	Geometry Position & Direction Decimals Negative Numbers Converting Units Volume
Year 6	Place Value Four Operations Fractions Converting Units	Ratio Algebra Decimals FD&P Area, Perimeter & Volume Statistics	Geometry Position & Direction

Vocabulary

	Key Vocabulary
EYFS	**Number and place value** Number zero number one, two, three … to twenty and beyond teens numbers, eleven, twelve … twenty none how many …? count, count (up) to, count on (from, to), count back (from, to) count in ones, twos, fives, tens is the same as more, less odd, even few pattern pair **Place value** ones tens digit the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less compare order size first, second, third… twentieth last, last but one before, after next between
Year 1	**Number and place value** Number numeral zero one, two, three … twenty teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred, two hundred … one thousand … ten thousand, hundred thousand, million none how many …? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on to hundreds, thousands equal to equivalent to is the same as more, less most, least tally many odd, even multiple of, factor of sequence continue predict few pattern pair, rule relationship next, consecutive > greater than < less than Roman numerals integer, positive, negative above/below zero, minus negative numbers

	Place value ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third … twentieth twenty-first, twenty-second … last, last but on before, after next between halfway between above, below
Year 2	**Number and place value** number numeral zero one, two, three … twenty teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred, two hundred … one thousand none how many …? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours and so on equal to equivalent to is the same as more, less most, least tally many odd, even multiple of sequence continue predict few pattern pair, rule > greater than < less than Place value ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more one less, ten less equal to compare order size first, second, third … twentieth twenty-first, twenty-second … last, last but one before, after next between halfway between above, below

Year 3	**Number and place value**
	number numeral zero one, two, three … twenty teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred, two hundred … one thousand none how many …? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours, eights, fifties and so on to hundreds equal to equivalent to is the same as more, less most, least tally many odd, even multiple of, factor of sequence continue predict few pattern pair, rule relationship > greater than < less than Roman numerals
	Place value
	ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more one less, ten less, one hundred less equal to compare order size first, second, third … twentieth twenty-first, twenty-second … last, last but one before, after next between halfway between above, below
Year 4	**Number and place value**
	number numeral zero one, two, three … twenty teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred, two hundred … one thousand … ten thousand, hundred thousand, million none how many …? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on to hundreds, thousands equal to

	equivalent to is the same as more, less most, least tally many odd, even multiple of, factor of sequence continue predict few pattern pair, rule relationship next, consecutive > greater than < less than Roman numerals integer, positive, negative above/below zero, minus negative numbers **Place value** ones tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third … twentieth twenty-first, twenty-second … last, last but on before, after next between halfway between above, below
Year 5	**Number and place value** number, numeral, zero, one, two, three … twenty, teens numbers, eleven, twelve … twenty twenty-one, twenty-two … one hundred, two hundred … one thousand … ten thousand, hundred thousand, million none how many …? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on to hundreds, thousands equal to equivalent to is the same as more, less most, least tally many odd, even multiple of, factor of factor pair sequence continue predict few pattern pair, rule relationship next, consecutive > greater than < less than ≥ greater than or equal to ≤ less than or equal to Roman numerals

	integer, positive, negative above/below zero, minus negative numbers formula divisibility square number prime number ascending/descending order **Place value** ones, tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third ... twentieth twenty-first, twenty-second ... last, last but one, before, after next between halfway between above, below
Year 6	**Number and place value** number, numeral zero one, two, three ... twenty, teens, numbers, eleven, twelve ... twenty twenty-one, twenty-two ... one hundred, two hundred ... one thousand ... ten thousand, hundred thousand, million none how many ...? count, count (up) to, count on (from, to), count back (from, to) forwards backwards count in ones, twos, fives, tens, threes, fours, eights, fifties, sixes, sevens, nines, twenty-fives and so on to hundreds, thousands equal to equivalent to is the same as more, less most, least tally many odd, even multiple of, factor of factor pair sequence continue predict few pattern pair, rule relationship next, consecutive > greater than < less than ≥ greater than or equal to ≤ less than or equal to Roman numerals integer, positive, negative above/below zero, minus negative numbers formula divisibility square number prime number factorise prime factor ascending/descending order digit total **Place value**

	Ones, tens, hundreds digit one-, two- or three-digit number place, place value stands for, represents exchange the same number as, as many as more, larger, bigger, greater fewer, smaller, less fewest, smallest, least most, biggest, largest, greatest one more, ten more, one hundred more, one thousand more one less, ten less, one hundred less, one thousand less equal to compare order size first, second, third … twentieth twenty-first, twenty-second … last, last but one before, after next between, halfway between, above, below