

powerful Maths

By the time they leave, pupils will:

- Have a secure and deep understanding of number, including place value, number facts and the four operations, and apply this understanding fluently to solve problems
- Reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof
- Solve problems by applying mathematics to a variety of routine and non-routine problems with increasing sophistication
- Use mathematical vocabulary and language accurately and precisely, and explain their reasoning using M.I.C.E: Manipulatives, Illustrations, Calculations and Explain
- Make connections across different areas of mathematics and to other subjects, understanding the coherence of the subject as a whole
- Develop fluency in calculation, including efficient written methods and appropriate mental strategies
- Read, interpret and represent data and information in a range of graphical forms, and use this to solve problems
- Measure and calculate with confidence in a range of contexts, including money, time, length, mass, volume and geometry

EYFS links

Number

Have a deep understanding of number to 10, including the composition of each number.

Subitise (recognise quantities without counting) up to 5.

Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10.

Numerical Patterns

Verbally count beyond 20, recognising the pattern of the counting system.

Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other.

Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

Shape, Space and Measures

Select, rotate and manipulate shapes in order to develop spatial reasoning skills.

Compose and decompose shapes so that children recognise a shape can have other shapes within it.

Continue, copy and create repeating patterns.

Curriculum Intent – Mathematics at Mill View Primary School

At Mill View Primary School, we believe that learning is at its most powerful when it is challenged, tested, truly known, and when children can do something with it: change themselves, change their community, change the world.

Mathematics sits at the heart of this vision through its insistence on understanding: not what is the answer, but why does it work, and how do I know? Our Mathematics curriculum is built on the mastery approach of the National Centre for Excellence in the Teaching of Mathematics (NCETM), developing children who can reason mathematically, make connections across the subject, and use their knowledge fluently to solve problems they have not seen before.

We are guided by the principle of Powerful Mathematical Knowledge: the understanding that emerges when disciplinary skill meets substantive knowledge. This knowledge is emancipatory: it breaks down barriers of social inequality, challenges the idea that mathematics is for some children and not others, and is fundamental in developing the logical, precise and creative thinking needed to understand and change the world. It allows children to know that they can always find the answer if they reason carefully enough. It progresses communities.

Disciplinary Skills: the skills of a mathematician

How we think and reason mathematically: the Five Big Ideas of mastery – coherence, representation and structure, mathematical thinking, variation and fluency.

At Mill View we use: M.I.C.E (Manipulatives, Illustrations, Calculations, Explain) · The Five Big Ideas of Mastery · Concrete-Pictorial-Abstract (CPA) progression · Bar modelling · Key Questions · Knowledge Organisers

Substantive Knowledge: the knowledge of a mathematician

The factual content, mathematical vocabulary, number facts, procedures and concepts across Number, Measurement, Geometry and Statistics that pupils need to think and reason with.

At Mill View we use: Key Questions · Curriculum Objectives · Progressive planning of units · Knowledge Organisers including key vocabulary and key facts for each unit

Powerful Mathematical Knowledge, combining these two areas **combine**, they produce something greater than the sum of their parts.

This knowledge is **emancipatory**. It breaks down barriers of social inequality and challenges the idea that mathematics is for some and not others, and is fundamental in developing the logical, creative and precise thinking needed to understand and change the world. Pupils begin to see that mathematics is a connected whole, not a set of unrelated procedures to be memorised and forgotten. It is empowering. It progresses communities.

At Mill View we encourage deep understanding, mathematical talk and the resilience to try and try again. We do this through careful, progressive planning of units and high-quality, mastery-based teaching, allowing children the chance to understand, connect, then apply their mathematical knowledge.

Our Five Curriculum Commitments

Oracy	Global Challenges	Career & Future Ready Learners	Inclusion	What Makes Our Curriculum Exceptional?
Mathematics has its own precise and beautiful language. At Mill View, oracy in Mathematics means: • Pupils use the precise vocabulary of mathematics (factor, denominator, equivalent) as naturally as they use everyday speech. • M.I.C.E – Manipulatives, Illustrations, Calculations, Explain – is embedded in every lesson, giving pupils a structured, oral route to mathematical understanding. • Pupils are taught to explain their reasoning out loud, not just produce a correct answer. • Talk is used to surface and challenge misconceptions, the most powerful diagnostic tool in mathematics.	Our Mathematics curriculum connects pupils to the mathematical structures that underpin global life. • Units on data, statistics and measure connect mathematics explicitly to real-world problems: climate data, budgeting, population, nutrition. • We ask: how do we know this data is reliable? Who is using these numbers, and why? • Pupils develop the mathematical literacy to question, analyse and challenge the numbers used to describe their world. • Our curriculum meets the 2025 Curriculum Review's call for global perspectives to be woven through, not added on.	Mathematical knowledge is the most transferable intellectual tool in the curriculum. • We develop transferable dispositions: precision, logical reasoning, perseverance, and the ability to spot a pattern. • Career links are explicit: engineering, architecture, data science, medicine, economics, programming, finance. • Pupils experience the full mathematical cycle: noticing a pattern, forming a conjecture, proving or disproving it. • The habits of mind built here, checking, connecting, reasoning, persevering, transfer to every subject and every future career.	Inclusion at Mill View is a design principle, not a retrofit. • The mastery approach means every pupil is expected to achieve deep understanding, not just an answer, and no child is moved on before understanding is secure. • The "Children can..." structure gives every pupil a clear entry point with scope for depth. • Concrete resources, visual representations and the CPA approach mean mathematical ideas are accessible to every learner, not just those who can hold abstract symbols in their heads. • We reject the idea that some children are 'not maths people': the EEF's evidence consistently shows that mastery approaches reduce the attainment gap.	What makes Mathematics at Mill View exceptional is the coherence of our vision from EYFS to Year 6. A clear conceptual spine: Number, Measurement, Geometry and Statistics build year on year with deep understanding before breadth. Mastery by design: Every unit is built around the Five Big Ideas: coherence, representation and structure, mathematical thinking, variation and fluency. Emancipatory knowledge: We insist that mathematics is for every child and build the reasoning that makes it stick. The disciplinary habit: By Year 6, our pupils think like mathematicians. This is the entitlement of every child.

"Mathematics is learning at its most powerful: a pattern noticed, a proof constructed, and a way of thinking children can use to change themselves, their community, and their world."

Alignment with the Ofsted Inspection Framework, Maths Research Review and 2025 Curriculum Review

Ofsted / Curriculum Review focus	How Mathematics at Mill View responds
Curriculum coherence: knowledge builds cumulatively	Our progression is built on the NCETM's mastery curriculum, in which number is prioritised and deep understanding in each year group is secured before moving on. The Five Big Ideas of mastery ensure coherence across every year group from EYFS to Year 6.
Oracy as a curriculum entitlement	M.I.C.E (Manipulatives, Illustrations, Calculations, Explain) is embedded in every lesson. Pupils explain their reasoning orally before committing to written methods, addressing a key finding of the Ofsted Maths Research Review (2021) that mathematical language must be explicitly taught.
Global perspectives and contemporary relevance	Units on statistics, measure and financial mathematics connect pupils to real-world data and global challenges, meeting the 2025 Curriculum Review's call for global perspectives to be woven through, not added on.
Adaptive teaching: high expectations for all	Inclusion is a design principle rooted in the mastery philosophy: every child can succeed in mathematics. The EEF's evidence on teaching and learning in maths consistently shows that well-implemented mastery approaches, including CPA and mathematical talk, narrow the attainment gap.
Assessment that proves knowledge has stuck	Key Assessment Questions, Knowledge Organisers and end-of-unit checks test whether mathematical concepts are understood and can be applied in unfamiliar contexts, not just recognised from recent practice.
Disciplinary knowledge and skills	The Five Big Ideas of mastery – coherence, representation and structure, mathematical thinking, variation and fluency – are tracked alongside substantive content knowledge across Number, Measurement, Geometry and Statistics, with explicit progression from EYFS to Year 6, in line with the National Curriculum for Mathematics and the NCETM Curriculum Prioritisation guidance.
Career and future readiness	Mathematical reasoning, precision and perseverance are explicitly linked to careers across STEM, finance, data science and any future where evidence must be evaluated and decisions made from numbers.

Curriculum Progression in Mathematics from EYFS to Year 6

Built on the NCETM Mastery Curriculum · Five Big Ideas · M.I.C.E · Concrete–Pictorial–Abstract · National Curriculum for Mathematics (DfE)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
COUNTING						
	Count to and across 100 forwards and backwards, beginning with 0 or 1, or from any given number. Count in multiples of twos, fives and tens.	Count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward.	Count from 0 in multiples of 4, 8, 50 and 100. Find 10 or 100 more or less than a given number.	Count in multiples of 6, 7, 9, 25 and 1000. Find 1000 more or less than a given number. Count backwards through zero to include negative numbers.	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000. Interpret negative numbers in context; count forwards and backwards with positive and negative whole numbers through zero.	Use negative numbers in context, and calculate intervals across zero.
READING, WRITING AND REPRESENTING NUMBERS						
	Count, read and write numbers to 100 in numerals. Read and write numbers from 1 to 20 in numerals and words. Identify and represent numbers using objects and pictorial representations including the number line.	Recognise the place value of each digit in a two-digit number (tens, ones). Identify, represent and estimate numbers using different representations, including the number line. Read and write numbers to at least 100 in numerals and in words.	Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words.	Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, ones). Order and compare numbers beyond 1000. Round any number to the nearest 10, 100 or 1000. Read Roman numerals to 100 (I to C).	Read, write, order and compare numbers to at least 1 000 000. Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000. Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Read, write, order and compare numbers up to 10 000 000. Round any whole number to a required degree of accuracy. Solve number and practical problems involving all of the above.

Number and Place Value

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
MULTIPLICATION AND DIVISION FACTS						
	Solve one-step problems involving multiplication and division using concrete objects, pictorial representations and arrays.	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall multiplication and division facts for multiplication tables up to 12×12 . Recognise and use factor pairs and commutativity in mental calculations.	Identify multiples and factors, including all factor pairs and common factors. Know and use vocabulary of prime numbers, prime factors and composite numbers. Establish whether a number up to 100 is prime; recall prime numbers up to 19. Recognise and use square numbers and cube numbers (notation: 2 and 3).	Identify common factors, common multiples and prime numbers. Use the order of operations to carry out calculations involving the four operations.
WRITTEN AND MENTAL METHODS						
		Calculate mathematical statements for multiplication and division within the multiplication tables, using $\times$, $\div$ and $=$ signs. Show that multiplication can be done in any order (commutative).	Write and calculate mathematical statements for multiplication and division using known tables, including two-digit $\times$ one-digit, using mental and formal written methods.	Use place value, known and derived facts to multiply and divide mentally. Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.	Multiply numbers up to 4 digits by one- or two-digit numbers using formal written methods (including long multiplication). Divide numbers up to 4 digits by a one-digit number using short division. Multiply and divide whole numbers and	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using long multiplication. Divide numbers up to 4 digits by a two-digit number using long division and short division where appropriate.

					decimals by 10, 100 and 1000.	
SOLVING PROBLEMS						
		Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and facts, including problems in contexts.	Solve problems involving missing number problems, multiplication and division, including integer scaling and correspondence problems.	Solve problems involving multiplying and adding, including the distributive law. Solve integer scaling problems and problems involving harder correspondence.	Solve problems involving multiplication and division, including factors, multiples, squares and cubes. Solve problems involving combination of four operations.	Perform mental calculations with mixed operations and large numbers. Solve problems involving four operations and use estimation to check answers.

Addition and Subtraction

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
MENTAL AND WRITTEN CALCULATION						
	Read, write and interpret mathematical statements involving addition (+), subtraction (−) and equals (=) signs. Add and subtract one-digit and two-digit numbers to 20, including zero. Represent and use number bonds and related subtraction facts within 20.	Recall and use addition and subtraction facts to 20 fluently. Add and subtract: two-digit numbers and ones; two-digit numbers and tens; two two-digit numbers; three one-digit numbers, using concrete objects, pictorial representations, and mentally.	Add and subtract numbers mentally: three-digit number and ones; three-digit number and tens; three-digit number and hundreds. Add and subtract numbers with up to three digits using formal written methods of columnar addition and subtraction.	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction. Estimate and use inverse operations to check answers.	Add and subtract whole numbers with more than 4 digits using formal written methods. Add and subtract numbers mentally with increasingly large numbers. Use rounding to check answers to calculations and determine levels of accuracy.	Perform mental calculations, including with mixed operations and large numbers. Use the order of operations to carry out calculations involving the four operations.
SOLVING PROBLEMS						
	Solve one-step problems that involve addition and	Solve problems with addition and subtraction, including	Estimate the answer to a calculation and	Solve addition and subtraction two-step problems in contexts,	Solve addition and subtraction multi-step problems in contexts,	Solve addition and subtraction multi-step problems in contexts,

	subtraction, using concrete objects and pictorial representations, and missing number problems.	those involving numbers, quantities and measures; recognise and use the inverse relationship between addition and subtraction.	use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.	deciding which operations and methods to use and why.	deciding which operations and methods to use and why.	deciding which operations and methods to use and why. Use estimation to check answers to calculations and determine an appropriate degree of accuracy.
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Multiplication and Division

Fractions (including Decimals and Percentages)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	FRACTIONS					
	Recognise, find and name a half as one of two equal parts. Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.	Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a length, shape, set of objects or quantity. Write simple fractions (e.g. $\frac{1}{2}$ of $6 = 3$) and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$.	Count up and down in tenths; recognise that tenths arise from dividing into 10 equal parts. Recognise, find and write unit and non-unit fractions of discrete sets of objects. Recognise and show equivalent fractions with small denominators. Add and subtract fractions with the same denominator within one whole. Compare and order unit fractions, and	Recognise and show families of common equivalent fractions. Add and subtract fractions with the same denominator. Solve problems involving increasingly harder fractions to calculate quantities.	Compare and order fractions whose denominators are multiples of the same number. Identify, name and write equivalent fractions of a given fraction. Recognise mixed numbers and improper fractions; convert between them. Add and subtract fractions with denominators that are multiples of the same number. Multiply proper fractions and mixed	Use common factors to simplify fractions; use common multiples to express fractions in the same denomination. Compare and order fractions, including fractions >1 . Add and subtract fractions with different denominators and mixed numbers using equivalent fractions. Multiply simple pairs of proper fractions, writing the answer in its simplest form.

			fractions with the same denominators.		numbers by whole numbers.	Divide proper fractions by whole numbers.
DECIMALS AND PERCENTAGES						
				Count up and down in hundredths. Recognise and write decimal equivalents of any number of tenths or hundredths. Recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$ and $\frac{3}{4}$. Round decimals with one decimal place to the nearest whole number. Compare numbers with the same number of decimal places up to two decimal places.	Read and write decimal numbers as fractions. Recognise and use thousandths; relate them to tenths, hundredths and decimal equivalents. Round decimals with two decimal places to nearest whole number and one decimal place. Read, write, order and compare numbers with up to three decimal places. Recognise the per cent symbol (%) and understand that per cent relates to parts per hundred. Write percentages as a fraction with denominator 100, and as a decimal. Solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$.	Associate a fraction with division; calculate decimal fraction equivalents for a simple fraction. Identify the value of each digit in numbers given to three decimal places. Multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places. Recall and use equivalences between simple fractions, decimals and percentages. Solve problems involving percentages and use of percentages for comparison. Solve problems which require answers to be rounded to specified degrees of accuracy.

Measurement

	Recognise and know the value of different denominations of coins and notes. Tell the time to the hour and half past the hour and draw the hands on a clock face. Sequence events in chronological order; recognise and use language relating to dates.	Recognise and use symbols for pounds (£) and pence (p); combine amounts; find different combinations of coins. Tell and write the time to five minutes, including quarter past/to the hour. Know the number of minutes in an hour and hours in a day.	Add and subtract amounts of money to give change, using both £ and p. Tell and write the time from an analogue clock, including Roman numerals, 12-hour and 24-hour clocks. Estimate and read time to the nearest minute; know the number of seconds in a minute and days in each month and year.	Read, write and convert time between analogue and digital 12- and 24-hour clocks. Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days.	Solve problems involving converting between units of time. Use all four operations to solve problems involving measure using decimal notation, including scaling.	Solve problems involving the calculation and conversion of units of measure.
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Ratio and Proportion

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
RATIO AND PROPORTION						
						Solve problems involving the relative sizes of two quantities where missing values can be found using integer multiplication and division facts. Solve problems involving similar shapes where the scale factor is known or can be found. Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

						Solve problems involving the calculation of percentages and use of percentages for comparison.
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Algebra

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
ALGEBRA						
						Use simple formulae. Generate and describe linear number sequences. Express missing number problems algebraically. Find pairs of numbers that satisfy an equation with two unknowns. Enumerate possibilities of combinations of two variables.

Statistics

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
INTERPRETING, CONSTRUCTING AND PRESENTING DATA						
		Interpret and construct simple pictograms, tally charts, block diagrams and simple tables.	Interpret and present data using bar charts, pictograms and tables.	Interpret and present discrete and continuous data using appropriate graphical methods, including	Complete, read and interpret information in tables, including timetables.	Interpret and construct pie charts and line graphs and use these to solve problems.

		Ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity. Ask and answer questions about totalling and comparing categorical data.		bar charts and time graphs.		
SOLVING PROBLEMS						
			Solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph.	Calculate and interpret the mean as an average.

Geometry: Position and Direction

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
POSITION, DIRECTION AND MOVEMENT						
	Describe position, direction and movement, including half, quarter and three-quarter turns.	Use mathematical vocabulary to describe position, direction and movement including movement in a straight line and distinguishing between rotation as a turn and in terms of right angles for quarter, half and		Describe positions on a 2-D grid as coordinates in the first quadrant. Describe movements between positions as translations of a given unit to the left/right and up/down. Plot specified points and draw sides to	Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed.	Describe positions on the full coordinate grid (all four quadrants). Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.

		three-quarter turns (clockwise and anti-clockwise).		complete a given polygon.		
PATTERN						
		Order and arrange combinations of mathematical objects in patterns and sequences.				

Geometry: Properties of Shapes

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
IDENTIFYING SHAPES AND THEIR PROPERTIES						
	Recognise and name common 2-D and 3-D shapes, including 2-D shapes (e.g. rectangles, circles and triangles) and 3-D shapes (e.g. cuboids, pyramids and spheres).	Identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line. Identify and describe the properties of 3-D shapes, including the number of edges, vertices and faces. Identify 2-D shapes on the surface of 3-D shapes.		Identify lines of symmetry in 2-D shapes presented in different orientations.	Identify 3-D shapes, including cubes and other cuboids, from 2-D representations.	Recognise, describe and build simple 3-D shapes, including making nets. Illustrate and name parts of circles, including radius, diameter and circumference, and know that the diameter is twice the radius.
DRAWING AND CONSTRUCTING						
			Draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them.	Complete a simple symmetric figure with respect to a specific line of symmetry.	Draw given angles, and measure them in degrees.	Draw 2-D shapes using given dimensions and angles. Recognise, describe and build simple 3-D

						shapes, including making nets.
COMPARING AND CLASSIFYING						
		Compare and sort common 2-D and 3-D shapes and everyday objects.		Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.	Use the properties of rectangles to deduce related facts and find missing lengths and angles. Distinguish between regular and irregular polygons based on reasoning about equal sides and angles.	Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons.
ANGLES						
			Recognise angles as a property of shape or a description of a turn. Identify right angles, recognise that two right angles make a half-turn, three make three-quarters of a turn and four a complete turn; identify whether angles are greater or less than a right angle. Identify horizontal and vertical lines and pairs of perpendicular and parallel lines.	Identify acute and obtuse angles and compare and order angles up to two right angles by size.	Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles. Identify angles at a point and one whole turn (360°); angles at a point on a straight line and $\frac{1}{2}$ a turn (180°); other multiples of 90°.	Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.