



Progression in Maths

We intend to develop a rich mathematics curriculum which is accessible to all and enables pupils to acquire a deep, long-term, secure and adaptable understanding of the subject. We deliver lessons that are creative and engaging as we want all pupils to have a sense of enjoyment and curiosity about the subject. We want pupils to make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competency in solving increasingly sophisticated problems.

We deliver this through following the Essential Maths planning (HfL Maths), which allows us to plan and teach clearly sequenced lessons building on prior learning to allow for spiral progression throughout the years to support pupils' retrieval. Our maths curriculum runs across the school for Early Years Foundation Stage through to Year 6, and we have clear long-term plans that are matched to the national curriculum aims for each year group.

In our school we have chosen to follow the mixed-year essential planning as this allows for suitable progression across all year groups as well as ensuring the concepts are secure and pupils are challenged within every class. Another reason we have decided to use the mixed-aged planning is that we previously found that one-year group suffered in each class and this planning allows for stretch and challenge for both year groups. The essential maths planning also allows for consistency of rich mathematical specific vocabulary and modelling throughout the year groups, through using this clearly structured planning we are also able to focus on the reasoning and application to allow for the security within the curriculum which is important for the pupils at our school.

To suit our pupils, we teach through a concrete, pictorial and abstract approach throughout the school, however, to support the transition into secondary school the use of concrete materials is reduced within Class 4. Teachers structure their lessons depending on the most suitable pedagogy for their class and the learning objective being met. Throughout the lessons, teachers carry out formative assessments as well as marking and producing suitable next steps to ensure the pupils' learning is secure and retained. Retention of learning over time is an important whole school approach where we focus on retention of prior learning at the beginning of lessons through a range of starters which again allow for assessment to take place.

We want the pupils to know that maths is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment.

Intent for pupils with gaps and SEND

Teachers and teaching assistants identify specific gaps and through systematic intervention support pupils in order to address these. We work on developing their independence to allow for their enjoyment of maths and self-esteem within the subject, so they are able to achieve within the lessons independently. Lessons are structured accordingly to the pupils within each class and the teachers structure lessons depending on the topic being taught, the pupils who need to be supported and the pupils who need to be challenged. We are aware that disadvantaged pupils may have less prior knowledge and experiences with maths in the wider world, therefore we ensure our maths lessons are linked to the outside world to ensure disadvantaged pupils understand the relation between maths and real-life contexts.

Supporting staff

We support the staff across the school and ensuring extra support and training is provided when needed. Internal support is provided through regular conversations while passing in the corridors, emails to check in with teachers as well as staff-meeting multiplication training. We also ensure external support is provided where necessary, for example this included bar modelling training when we identified the need for staff to be further secure on the model and Essential Maths training for our Early Years Staff and the implementation of the essential maths planning within reception. As well as this we regularly touch base with staff within staff meetings.

How maths is taught consistently

Across the school, teachers use clear scaffolding in order to promote and develop independence. When deemed appropriate through teachers using their own judgement and assessment, the scaffolding support is gradually removed to further challenge the pupils. Each class uses clear modelling of strategies throughout the lessons and this is then available on working walls and washing lines for the children to refer back to throughout the sequence of lessons. We provide opportunities for all pupils to reason and problem solve, ensuring they are building a range of skills within their maths lessons.



Progression in Maths

The table shows when concepts should be introduced first, not necessarily when they should be completely understood It is very important, therefore, that the content in earlier years be **revisited** in subsequent years to consolidate knowledge and build on pupils' understanding Teachers should also go beyond the content set out here if they feel it is appropriate

Progression: Addition and subtraction (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as other quantity solve real world mathematical problems with numbers of 5 count objects actions and sounds subitise up to 5 understand the 1 more 1 less relationship between consecutive numbers explore the composition of numbers to 10 and have a deep understanding of numbers to 10 automatically recall number bonds from 0 to 10 automatically recall (without reference to rhymes, counting or aids) number bonds up to 5 (including subtraction facts) and some number bonds to 10 including doubles compare quantities using 'more than' and 'fewer than' 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs represent and use number bonds and related subtraction facts within 20 add and subtract one-digit and two-digit numbers to 20, including zero solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$ 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> solve problems with addition and subtraction: - using concrete objects and pictorial representations, including those involving numbers, quantities and measures - applying their increasing knowledge of mental and written methods recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> - a two-digit number and ones - a two-digit number and tens - two two-digit numbers - adding three one-digit numbers show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> add and subtract numbers mentally, including: <ul style="list-style-type: none"> - a three-digit number and ones - a three-digit number and tens - a three-digit number and hundreds add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate estimate and use inverse operations to check answers to a calculation solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) add and subtract numbers mentally with increasingly large numbers use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> perform mental calculations, including with mixed operations and large numbers use their knowledge of the order of operations to carry out calculations involving the four operations solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why solve problems involving addition and subtraction, use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Addition and Subtraction Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> combine parts to make a whole and using the part, whole model to develop an understanding of addition explore what to do when something is missing in a part, whole model; making links to subtraction and finding the difference 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> memorise and reason with number bonds to 10 and 20 in several forms (for example, $9 + 7 = 16$; $16 - 7 = 9$; $7 = 16 - 9$) realise the effect of adding or subtracting zero This establishes addition and subtraction as related operations combine and increase numbers, counting forwards and backwards discuss and solve problems in familiar practical contexts, including using quantities Problems should include the terms: put together, add, altogether, total, take away, distance between, difference between, more than and less than, so that pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> extend their understanding of the language of addition and subtraction to include sum and difference practise addition and subtraction to 20 to become increasingly fluent in deriving facts such as using $3 + 7 = 10$, $10 - 7 = 3$ and $7 = 10 - 3$ to calculate $30 + 70 = 100$, $100 - 70 = 30$ and $70 = 100 - 30$ check their calculations, including by adding to check subtraction and adding numbers in a different order to check addition (for example, $5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5$) This establishes commutativity and associativity of addition record addition and subtraction in columns supports place value and prepares for formal written methods with larger numbers 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> practise solving varied addition and subtraction questions, for mental calculations with two-digit numbers, the answers could exceed 100 use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> practise both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency practise mental calculations with increasingly large numbers to aid fluency (for example, $12\ 462 - 2\ 300 = 10\ 162$) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> practise addition and subtraction for larger numbers, using the formal written methods of columnar addition and subtraction undertake mental calculations with increasingly large numbers and more complex calculations round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc, but not to a specified number of significant figures explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$

Progression: Fractions (decimals Y4+; percentages Y5+) (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise, find and name a half as one of two equal parts of an object, shape or quantity recognise, find and name a quarter as one of four equal parts of an object, shape or quantity 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 for example, $\frac{1}{2}$ of 6 = 3 and recognise the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$ 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators recognise and show, using diagrams, equivalent fractions with small denominators add and subtract fractions with the same denominator within one whole (for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$) compare and order unit fractions, and fractions with the same denominators solve problems that involve all of the above 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise and show, using diagrams, families of common equivalent fractions count up and down in hundredths; recognise that hundredths arise when dividing an object by a hundred and dividing tenths by ten solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number add and subtract fractions with the same denominator recognise and write decimal equivalents of any number of tenths or hundredths recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths 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 solve simple measure and money problems involving fractions and decimals to two decimal places 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare and order fractions whose denominators are all multiples of the same number identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number (for example, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$) add and subtract fractions with the same denominator and denominators that are multiples of the same number multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams read and write decimal numbers as fractions (for example, 0.71 = $\frac{71}{100}$) recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents round decimals with two decimal places to the nearest whole number and to one decimal place read, write, order and compare numbers with up to three decimal places solve problems involving number up to three decimal places recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator 100, and as a decimal solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those with a denominator of a multiple of 10 or 25 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> 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 the concept of equivalent fractions multiply simple pairs of proper fractions, writing the answer in its simplest form (for example, $\frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$) divide proper fractions by whole numbers (for example, $\frac{1}{3} \div 2 = \frac{1}{6}$) associate a fraction with division and calculate decimal fraction equivalents (for example, 0.375) for a simple fraction (for example, $\frac{3}{8}$) identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places multiply one-digit numbers with up to two decimal places by whole numbers use written division methods in cases where the answer has up to two decimal places solve problems which require answers to be rounded to specified degrees of accuracy recall and use equivalences between simple fractions, decimals and percentages, including in different contexts

Fractions Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • half and quarter as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities For example, they could recognise and find half a length, quantity, set of objects or shape • halves and quarters to the equal sharing and grouping of sets of objects and to measures, as well as recognising and combining halves and quarters as parts of a whole 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • use fractions as 'fractions of' discrete and continuous quantities by solving problems using shapes, objects and quantities • connect unit fractions to equal sharing and grouping, to numbers when they can be calculated, and to measures, finding fractions of lengths, quantities, set of objects or shapes • meet $\frac{3}{4}$ as the first example of a non-unit fraction • count in fractions up to 10, starting from any number and using the $\frac{1}{2}$ and $\frac{2}{4}$ equivalence on the number line (for example, $1\frac{1}{4}$, $1\frac{2}{4}$ (or $1\frac{1}{2}$), $1\frac{3}{4}$, 2) This reinforces the concept of fractions as numbers and that they can add up to more than one 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • connect tenths to place value, decimal measures and to division by 10 • understand unit and non-unit fractions as numbers on the number line, and deduce relations between them, such as size and equivalence They should go beyond the [0, 1] interval, including relating this to measure • understand the relation between unit fractions as operators (fractions of), and division by integers • continue to recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity • practise adding and subtracting fractions with the same denominator through a variety of increasingly complex problems to improve fluency 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • connect hundredths to tenths and place value and decimal measure • extend the use of the number line to connect fractions, numbers and measures • understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths • make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities • use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, $\frac{6}{9} = \frac{2}{3}$ or $\frac{1}{4} = \frac{2}{8}$) • continue to practise adding and subtracting fractions with the same denominator, to become fluent through a variety of increasingly complex problems beyond one whole • understand that decimals and fractions are different ways of expressing numbers and proportions • extend their understanding of the number line to tenths and then hundredths This includes relating the decimal notation to division of whole number by 10 and later 100 • practise counting using simple fractions and decimal fractions, both forwards and backwards • understand decimal notation and the language associated with it, including in the context of measurements • make comparisons and order decimal amounts and quantities that are 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • understand that percentages, decimals and fractions are different ways of expressing proportions • extend their knowledge of fractions to thousandths and connect to decimals and measures • connect equivalent fractions > 1 that simplify to integers with division and other fractions > 1 to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions • connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years This relates to scaling by simple fractions, including fractions > 1 • practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems • extend their understanding of adding and subtracting fractions to calculations that exceed 1 as a mixed number • count forwards and backwards in simple fractions • develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities • extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line • say, read and write decimal fractions and related tenths, hundredths and thousandths accurately 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator They should start with fractions where the denominator of one fraction is a multiple of the other (for example, $\frac{1}{2} + \frac{1}{8} = \frac{5}{8}$) and progress to varied and increasingly complex problems • use a variety of images to support their understanding of multiplication with fractions This follows earlier work about fractions as operators (fractions of), as numbers, and as equal parts of objects, for example as parts of a rectangle • use their understanding of the relationship between unit fractions and division to work backwards by multiplying a quantity that represents a unit fraction to find the whole quantity (for example, if $\frac{1}{4}$ of a length is 36cm, then the whole length is $36 \times 4 = 144$cm) • practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators • explore and make conjectures about converting a simple fraction to a decimal fraction (for example, $3 \div 8 = 0.375$) • round a decimal of a simple fraction with recurring decimal places to three decimal places • multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers

				<p>expressed to the same number of decimal places</p> <ul style="list-style-type: none"> represent numbers with one or two decimal places in several ways, such as on number lines 	<ul style="list-style-type: none"> check the reasonableness of their answers to problems mentally add and subtract tenths, and one-digit whole numbers and tenths practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example, $0.83 + 0.17 = 1$) go beyond the measurement and money models of decimals, for example, by solving puzzles involving decimals make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is $1/100$, 50% is $50/100$, 25% is $25/100$) and relate this to finding 'fractions of' 	<ul style="list-style-type: none"> multiply decimals by whole numbers, starting with the simplest cases, such as $0.4 \times 2 = 0.8$, and in practical contexts, such as measures and money divide decimal numbers by one-digit whole number, initially, in practical contexts involving measures and money recognise division calculations as the inverse of multiplication develop their skills of rounding and estimating as a means of predicting and checking the order of magnitude of their answers to decimal calculations This includes rounding answers to a specified degree of accuracy and checking the reasonableness of their answers
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Progression: Geometry: position and direction (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • draw information from a simple map • select, rotate and manipulate shape in order to develop spatial reasoning skills • understand position through words alone e.g. “bag is under the table” -with no pointing • describe a familiar route • discuss routes and locations using words like in front of, behind • talk about and identify patterns around them e.g. stripes on clothes, designs on rugs and wallpaper. Use informal language like “pointy, spotty, blobs” etc • extend and create abab patterns – stick, leaf, stick, leaf • notice and correct an error in repeating patterns • continue, copy and create repeating patterns 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • describe position, direction and movement, including whole, half, quarter and three-quarter turns 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • order and arrange combinations of mathematical objects in patterns and sequences • 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 three-quarter turns (clockwise and anti-clockwise) 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 complete a given polygon 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • 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

Geometry: Position and Direction Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> describe a familiar route 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> use the language of position, direction and motion, including: left and right, top, middle and bottom, on top of, in front of, above, between, around, near, close and far, up and down, forwards and backwards, inside and outside make whole, half, quarter and three-quarter turns in both directions and connect turning clockwise with movement on a clock face 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> work with patterns of shapes, including those in different orientations use the concept and language of angles to describe 'turn' by applying rotations, including in practical contexts (for example, pupils themselves moving in turns, giving instructions to other pupils to do so, and programming robots using instructions given in right angles) 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> draw a pair of axes in one quadrant, with equal scales and integer labels read, write and use pairs of coordinates (2, 5) including using coordinate-plotting ICT tools 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant understand that reflection should be in lines that are parallel to the axes 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> draw and label a pair of axes in all four quadrants with equal scaling This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers draw and label rectangles (including squares), parallelograms and rhombuses, specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes These might be expressed algebraically for example, translating vertex (a, b) to (a-2, b+3); (a, b) and (a+d, b+d) being opposite vertices of a square of side

Progression: Geometry: properties of shapes (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • talk about and explore 2D and 3D shapes (for example, circles, rectangles, triangles and cuboids) using informal and mathematical language: 'sides', 'corners'; 'straight', 'flat', 'round'. • select shapes appropriately: flat surfaces for building, a triangular prism for a roof etc. • combine shapes to make new ones – an arch, a bigger triangle etc • make comparisons between objects relating to size and length • select, rotate and manipulate shapes in order to develop spatial reasoning skills • compose and decompose shapes so that children recognise a shape can have a shape within it just as numbers can 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recognise and name common 2-D and 3-D shapes, including: • 2-D shapes [for example, rectangles (including squares), circles and triangles] • 3-D shapes [for example, cuboids (including cubes), pyramids and spheres] 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify and describe the properties of 2-D shapes, including the number of sides and 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, [for example a circle on a cylinder and a triangle on a pyramid] • compare and sort common 2-D and 3-D shapes and everyday objects 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • draw 2-D shapes and make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them • 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 than or less than a right angle • identify horizontal and vertical lines and pairs of perpendicular and parallel lines 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes • identify acute and obtuse angles and compare and order angles up to two right angles by size • identify lines of symmetry in 2-D shapes presented in different orientations • complete a simple symmetric figure with respect to a specific line of symmetry 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify 3-D shapes, including cubes and other cuboids, from 2-D representations • know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees (o) • identify angles at a point and one whole turn (total 360o) angles at a point on a straight line and ½ a turn (total 180o) • identify other multiples of 90o • 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • draw 2-D shapes using given dimensions and angles • recognise, describe and build simple 3-D shapes, including making nets • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles

Geometry: Properties of Shapes Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • Notice, describe and extend patterns, including thinking about what part is the repeating unit • Develop spatial thinking and spatial language linked to position and direction, in movements and using symbols 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • handle common 2-D and 3-D shapes, naming these and related everyday objects fluently • recognise these shapes in different orientations and sizes, and know that rectangles, triangles, cuboids and pyramids are not always similar to each other 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • handle and name a wider variety of common 2-D and 3-D shapes including: quadrilaterals and polygons, and cuboids, prisms and cones, and identify the properties of each shape (for example, number of sides, number of faces) • identify, compare and sort shapes on the basis of their properties and use vocabulary precisely, such as sides, edges, vertices and faces • read and write names for shapes that are appropriate for their word reading and spelling • draw lines and shapes using a straight edge 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • know the properties of symmetrical and non-symmetrical polygons and polyhedra • extend their use of the properties of shapes • describe the properties of 2-D and 3-D shapes using accurate language, including lengths of lines and acute and obtuse for angles greater or lesser than a right angle • connect decimals and rounding to drawing and measuring straight lines in centimetres, in a variety of contexts 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • classify shapes using geometrical properties, extending to classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium) • compare and order angles in preparation for using a protractor • compare lengths and angles to decide if a polygon is regular or irregular • draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • become accurate in drawing lines with a ruler to the nearest millimetre, • measure with a protractor • use conventional markings for parallel lines and right angles • use the term diagonal and make conjectures about the angles formed by diagonals and sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools • use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles • describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements • understand that these relationships might be expressed algebraically for example, $d = 2 \times r$; $a = 180 - (b + c)$

Progression: Measurement (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • make comparisons between objects relating to weight and capacity. • compare length, weight and capacity • begin to describe a sequence of events, real or fiction using words such as “first, then ..” 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • compare, describe and solve practical problems for: lengths and heights [for example, long/short, longer/shorter, tall/short, double/half] • compare, describe and solve practical problems for: mass / weight [for example, heavy/light, heavier than, lighter than] • compare, describe and solve practical problems for: capacity and volume [full/empty, more than, less than, half, half full, quarter] • compare, describe and solve practical problems for: time [quicker, slower, earlier, later] • measure and begin to record the following: lengths and heights, mass/weight, capacity and volume, time (hours, minutes, seconds) • recognise and know the value of different denominations of coins and notes • sequence events in chronological order using language [for example, before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening] • recognise and use language relating to dates, including days of the week, weeks, months and years • tell the time to the hour and half past the hour and draw the hands on a clock face to show these times 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • choose and use appropriate standard units to estimate and measure length/height in any direction (m/cm); mass (kg/g); temperature (°C); capacity (litres/ml) to the nearest appropriate unit, using rulers, scales, thermometers and measuring vessels • compare and order lengths, mass, volume/capacity and record the results using >, < and = • recognise and use symbols for pounds (£) and pence (p); combine amounts to make a particular value • find different combinations of coins that equal the same amounts of money • solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change • compare and sequence intervals of time • tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times • know the number of minutes in an hour and the number of hours in a day 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml) • measure the perimeter of simple 2-D shapes • add and subtract amounts of money to give change, using both £ and p in practical contexts • tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12-hour and 24-hour clocks • estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight • know the number of seconds in a minute and the number of days in each month, year and leap year • compare durations of events [for example to calculate the time taken by particular events or tasks] 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • convert between different units of measure (for example, kilometre to metre; hour to minute) • measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres • find the area of rectilinear shapes by counting squares • estimate, compare and calculate different measures, including money in pounds and pence • 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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares) using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes • estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity (for example, using water) • solve problems involving converting between units of time • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation including scaling 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places • convert between miles and kilometres • recognise that shapes with the same areas can have different perimeters and vice versa • recognise when it is possible to use formulae for area and volume of shapes • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]

Measurement Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> compare objects by length, thickness and weight/mass, using appropriate language to describe and order them 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> understand that the pairs of terms: mass and weight, volume and capacity, are used interchangeably at this stage move from using and comparing different types of quantities and measures using non-standard units, including discrete (for example, counting) and continuous (for example, liquid) measurement, to using manageable common standard units become familiar with standard measures and begin to use measuring tools such as a ruler, weighing scales and containers use the language of time, including telling the time throughout the day, first using o'clock and then half past 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> use standard units of measurement with increasing accuracy, using their knowledge of the number system use the appropriate language and record using standard abbreviations compare measures includes simple multiples such as 'half as high'; 'twice as wide' become fluent in telling the time on analogue clocks and recording it become fluent in counting and recognising coins read and say amounts of money confidently and use the symbols £ and p accurately, recording pounds and pence separately 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> continue to measure using the appropriate tools and units, progressing to using a wider range of measures, including comparing and using mixed units (for example, 1 kg and 200g) and simple equivalents of mixed units (for example, 5m = 500cm) understand the comparison of measures which should also include simple scaling by integers (for example, a given quantity or measure is twice as long or five times as high) and this connects to multiplication become fluent in recognising the value of coins, by adding and subtracting amounts, including mixed units, and giving change using manageable amounts record £ and p separately use both analogue and digital 12-hour clocks and record their times become fluent in and prepared for using digital 24-hour clocks in year 4 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> build on their understanding of place value and decimal notation to record metric measures, including money use multiplication to convert from larger to smaller units understand that perimeter can be expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit relate area to arrays and multiplication 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> use their knowledge of place value and multiplication and division to convert between standard units calculate the perimeter of rectangles and related composite shapes, including using the relations of perimeter or area to find unknown lengths explore missing measures questions and understand these can be expressed algebraically $4 + 2b = 20$ for a rectangle of sides 2 cm and b cm and perimeter of 20cm calculate the area from scale drawings using given measurements use all four operations in problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs know approximate conversions and are able to tell if an answer is sensible add and subtract positive and negative integers for measures such as temperature on a number line relate the area of rectangles to parallelograms and triangles, for example, by dissection, and calculate their areas, understanding and using the formulae (in words or symbols) to do this be introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate

Progression: Multiplication and Division (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught o</p> <ul style="list-style-type: none"> • explore and represent patterns within numbers to 10, including evens and odds, double facts and how these quantities can be distributed equally 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals ($=$) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods • solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which objects are connected to objects 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • recall multiplication and division facts for multiplication tables up to 12×12 • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations • multiply two-digit and three-digit numbers by a one-digit number using formal written layout • solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers • establish whether a number up to 100 is prime and recall prime numbers up to 19 • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers • multiply and divide numbers mentally drawing upon known facts • divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) • solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context • perform mental calculations, including with mixed operations and large numbers • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division • use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy

Multiplication and Division Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •explore doubling and halving, including solving problems involving doubling and halving •understand that numbers are either odd or even, looking at their 'shape' and whether they share fairly into two groups 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •group and sharing small quantities, pupils begin to understand: multiplication and division; doubling numbers and quantities; and finding simple fractions of objects, numbers and quantities •make connections between arrays, number patterns, and counting in twos, fives and tens 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •use a variety of language to describe multiplication and division •practise and become fluent in the 2, 5 and 10 multiplication tables and connect them to each other •connect the 10-multiplication table to place value, and the 5-multiplication table to the divisions on the clock face •begin to use other multiplication tables and recall multiplication facts, including using related division facts to perform written and mental calculations •work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete and continuous quantities, to arrays and to repeated addition •begin to relate these to fractions and measures (for example, $40 \div 2 = 20$, 20 is a half of 40) They use commutativity and inverse relations to develop multiplicative reasoning (for example, $4 \times 5 = 20$ and $20 \div 5 = 4$) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency •connect the 2, 4 and 8 multiplication tables through doubling and halving •develop efficient mental methods, for example, using commutativity and associativity (for example, $4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240$) and multiplication and division facts (for example, using $3 \times 2 = 6$, $6 \div 3 = 2$ and $2 = 6 \div 3$) to derive related facts ($30 \times 2 = 60$, $60 \div 3 = 20$ and $20 = 60 \div 3$) •develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the formal written methods of short multiplication and division •solve simple problems in contexts, deciding which of the four operations to use and why. These include measuring and scaling contexts, (for example, four times as high, eight times as long etc) and correspondence problems in which m objects are connected to n objects (for example, 3 hats and 4 coats, how many different outfits?; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •continue to practise recalling and using multiplication tables and related division facts to aid fluency •practise mental methods and extend this to three-digit numbers to derive facts (for example $600 \div 3 = 200$ can be derived from $2 \times 3 = 6$) •practise and become fluent in the formal written method of short multiplication and short division with exact answers (see Mathematics Appendix 1) •write statements about the equality of expressions (for example, use the distributive law $39 \times 7 = 30 \times 7 + 9 \times 7$ and associative law $(2 \times 3) \times 4 = 2 \times (3 \times 4)$) •combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations for example, $2 \times 6 \times 5 = 10 \times 6 = 60$ •solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the numbers of choices of a meal on a menu, or three cakes shared equally between 10 children 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •practise and extend their use of the formal written methods of short multiplication and short division •apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations •use and understand the terms factor, multiple and prime, square and cube numbers •interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example, $98 \div 4 = 98/4 = 24 \text{ r } 2 = 24\frac{1}{2} = 24.5 \approx 25$) •use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres •understand that distributivity can be expressed as $a(b + c) = ab + ac$ •understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, $4 \times 35 = 2 \times 2 \times 35$; $3 \times 270 = 3 \times 3 \times 9 \times 10 = 92 \times 10$) •use and explain the equals sign to indicate equivalence, including in missing number problems (for example, $13 + 24 = 12 + 25$; $33 = 5 \times \square$) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division •undertake mental calculations with increasingly large numbers and more complex calculations •continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency •round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc, but not to a specified number of significant figures •explore the order of operations using brackets; for example, $2 + 1 \times 3 = 5$ and $(2 + 1) \times 3 = 9$ •understand that common factors can be related to finding equivalent fractions

Progression: Number and place value (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •have a deep understanding of numbers to 10, including the composition of each number •subitise up to 5 •link the number symbol (numeral) with its cardinal number value. •count beyond ten. •compare numbers. •understand the ‘one more than/one less than’ relationship between consecutive numbers. •explore the composition of numbers to 10. •automatically recall number bonds for numbers 0–10 •verbally count beyond 20, recognising the pattern of the counting system •explore and represent patterns within numbers to 10, including even and odds •compare quantities using language ‘more than and less than’ 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> • count to and across 100, forwards and backwards, beginning with 0 or 1, or from any given number • count, read and write numbers to 100 in numerals; count in multiples of twos, fives and tens • given a number, identify one more and one less • identify and represent numbers using objects and pictorial representations including the number line, and use the language of: equal to, more than, less than (fewer), most, least • read and write numbers from 1 to 20 in numerals and words 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward •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 •compare and order numbers from 0 up to 100; use <, > and = signs •read and write numbers to at least 100 in numerals and in words •use place value and number facts to solve problems 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number •recognise the place value of each digit in a three-digit number (hundreds, tens, ones) •compare and order numbers up to 1000 •identify, represent and estimate numbers using different representations •read and write numbers up to 1000 in numerals and in words •solve number problems and practical problems involving these ideas 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •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 •recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) •order and compare numbers beyond 1000 •identify, represent and estimate numbers using different representations •round any number to the nearest 10, 100 or 1000 •solve number and practical problems that involve all of the above and with increasingly large positive numbers •read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero and place value 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit •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 •round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 •solve number problems and practical problems that involve all of the above •read Roman numerals to 1000 (M) and recognise years written in Roman numerals 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •read, write, order and compare numbers up to 10 000 000 and determine the value of each digit •round any whole number to a required degree of accuracy •use negative numbers in context, and calculate intervals across zero •solve number and practical problems that involve all of the above

Number and Place Value Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •use counting to compare and finding a precise numerical difference in sets of objects in varied contexts •count a set of items accurately, saying how many are in the set and comparing this to the amount in other sets •know the position of numbers 0-10 and the relationship to other numbers, including whether they are close to 0, 5 or 10 •count beyond 20, recognising the pattern of the counting system, exploring the value of tens and ones in numbers 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •practise counting (1, 2, 3), ordering (for example, first, second, third), or to indicate a quantity (for example, 3 apples, 2 centimetres), including solving simple concrete problems, until they are fluent •begin to recognise place value in numbers beyond 20 by reading, writing, counting and comparing numbers up to 100, supported by objects and pictorial representations •practise counting as reciting numbers and counting as enumerating objects, and counting in twos, fives and tens from different multiples to develop their recognition of patterns in the number system (for example, odd and even numbers), including varied and frequent practice through increasingly complex questions •recognise and create repeating patterns with objects and with shapes 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •use materials and a range of representations, practise counting, reading, writing and comparing numbers to at least 100 and solving a variety of related problems to develop fluency •count in multiples of three to support their later understanding of a third •become more confident with numbers up to 100, pupils are then introduced to larger numbers to develop further their recognition of patterns within the number system and represent them in different ways, including spatial representations •partition numbers in different ways (for example, $23 = 20 + 3$ and $23 = 10 + 13$) to support subtraction •become fluent and apply their knowledge of numbers to reason with, discuss and solve problems that emphasise the value of each digit in two-digit numbers •begin to understand zero as a place holder 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •use multiples of 2, 3, 4, 5, 8, 10, 50 and 100 •use larger numbers to at least 1000, applying partitioning related to place value using varied and increasingly complex problems, building on work in year 2 (for example, $146 = 100$ and 40 and 6, $146 = 130$ and 16) •use a variety of representations, including those related to measure •continue to count in ones, tens and hundreds, so that they become fluent in the order and place value of numbers to 1000 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •Use a variety of representations, including measures, to become fluent in the order and place value of numbers beyond 1000, including counting in tens and hundreds, and maintaining fluency in other multiples through varied and frequent practice •begin to extend their knowledge of the number system to include the decimal numbers and fractions that they have met so far •connect estimation and rounding numbers to the use of measuring instruments •put Roman numerals in their historical context so pupils understand that there have been different ways to write whole numbers and that the important concepts of zero and place value were introduced over a period of time 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •identify the place value in large whole numbers •continue to use number in context, including measurement •extend and apply their understanding of the number system to the decimal numbers and fractions that they have met so far •recognise and describe linear number sequences including those involving fractions and decimals, and find the term-to-term rule •recognise and describe linear number sequences (for example, $3, 3\frac{1}{2}, 4, 4\frac{1}{2}$), including those involving fractions and decimals, and find the term-to-term rule in words (for example, add $\frac{1}{2}$) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •use the whole number system, including saying, reading and writing numbers accurately

Progression: Statistics (statutory requirements)

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and construct simple pictograms, tally charts, block diagrams and simple tables •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 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and present data using bar charts, pictograms and tables •solve one-step and two-step questions [for example 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts and pictograms and tables 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs •solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •solve comparison, sum and difference problems using information presented in a line graph •complete, read and interpret information in tables, including timetables 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •interpret and construct pie charts and line graphs and use these to solve problems •calculate and interpret the mean as an average

Statistics: Non-statutory requirements

EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •classify (group) objects using given criteria and their own ideas and thinking about the groups after classification 		<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •record, interpret, collate, organise and compare information (for example, using many-to-one correspondence in pictograms with simple ratios 2, 5, 10) 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •understand and use simple scales (for example, 2, 5, 10 units per cm) in pictograms and bar charts with increasing accuracy •continue to interpret data presented in many contexts 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •understand and use a greater range of scales in their representations •start to relate the graphical representation of data to recording change over time 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •connect their work on coordinates and scales to their interpretation of time graphs •start to decide which representations of data are most appropriate and why 	<p>Pupils should be taught to:</p> <ul style="list-style-type: none"> •connect their work on angles, fractions and percentages to the interpretation of pie charts •encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects •connect conversion from kilometres to miles in measurement to its graphical representation •know when it is appropriate to find the mean of a data set

The new National Curriculum: Year 6 – Ratio and proportion and algebra

Ratio and proportion	Notes and guidance (non-statutory)
<p>Pupils should be taught to:</p> <ul style="list-style-type: none">• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts• solve problems involving the calculation of percentages [for example, of measures, such as 15% of 360] and the use of percentages for comparison• 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	<p>Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes, recipes)</p> <p>Pupils link percentages or 360° to calculating angles of pie charts</p> <p>Pupils should consolidate their understanding of ratio when comparing quantities, size and scale drawings by solving a variety of problems They might use the notation $a:b$ to record their work</p> <p>Pupils solve problems involving unequal quantities eg 'for every egg you need three spoonfuls of flour', '$\frac{3}{5}$ of the class are boys' These problems are the foundation for later formal approaches to ratio and proportion</p>

Algebra	Notes and guidance (non-statutory)
<p>Pupils should be taught to:</p> <ul style="list-style-type: none">• 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	<p>Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as:</p> <ul style="list-style-type: none">- missing numbers, lengths, coordinates and angles- formulae in mathematics and science- equivalent expressions (for example, $a + b = b + a$)- generalisations of number patterns- number puzzles (eg what two numbers can add up to)