

Key Areas of learning for Maths
Number: place value; addition and subtraction; multiplication and division; fractions; percentages; decimals;
Ratio and Proportion – recognise; solve; Algebra – use; generate; describe; express; enumerate.
Measurement: read; measure; compare; calculate; convert; estimate;
Geometry – draw; recognise; identify; compare; classify; describe; plot;
Statistics – present; draw; interpret;

Curriculum Overview

	Autumn	Spring	Summer
Year 3	Place value Addition & Subtraction Multiplication & division A	Multiplication & division B Length & perimeter Fractions A Mass & capacity	Fractions B Money Time Shape Statistics
Year 4	Place value Addition & Subtraction Area Multiplication & division A	Multiplication & division B Length & perimeter Fractions Decimals A	Decimals B Money Time Shape Statistics Position & direction
Year 5	Place value Addition & Subtraction Multiplication & division A Fractions A	Multiplication & division B Fractions B Decimals & percentages Perimeter & area Statistics	Shape Position & direction Decimals Negative numbers Converting units Volume
Year 6	Place value Addition, subtraction, multiplication & division Fractions A Fractions B Converting units	Ratio Algebra Decimals Fractions, decimals & percentages Area, perimeter & volume Statistics	Shape Position & direction Themed projects, consolidation & problem solving

The following tables show our knowledge and skills progression across the key areas of Maths as children progress through our school. We follow the White Rose Maths scheme of learning and use the pupil workbooks to support this.

Place Value					
	Year 2	Year 3	Year 4	Year 5	Year 6
Count	Know how to count in steps of 2, 3, and 5 from 0, and in tens from any number, forward and backward	Know how to count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number	Know how to count in multiples of 6, 7, 9, 25 and 1000 Know how to count backwards through zero to include negative numbers	Know how to count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 Know how to count forwards and backwards with positive and negative whole numbers, including through zero	
Represent	Know how to read and write numbers to at least 100 in numerals and in words Know how to identify, represent and estimate numbers using different representations, including the number line	Know how to identify, represent and estimate numbers using different representations Know how to read and write numbers up to 1000 in numerals and in words.	Know how to identify, represent and estimate numbers using different representations. Know how to 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	Know how to read, write, (order and compare) numbers to at least 1 000 000 and determine the value of each digit Know how to read Roman numerals to 1000 (M) and recognise years written in Roman numerals	Know how to read, write, (order and compare) numbers up to 10 000 000 and determine the value of each digit
Use and compare	Know the place value of each digit in a two-digit number (tens, ones) Know how to compare and order numbers from 0 up to 100; use and = signs	Know the place value of each digit in a three-digit number (hundreds, tens, ones) Know how to compare and order numbers up to 1000.	Know how to find 1000 more or less than a given number Know the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones). Know how to order and compare numbers beyond 1000	Know how to (read, write) order and compare numbers to at least 1 000 000 and determine the value of each digit	Know how to (read, write), order and compare numbers up to 10 000 000 and determine the value of each digit
Problems/Rounding	Know how to use place value and number facts to solve problems	Know how to solve number problems and practical problems involving these ideas	Know how to round any number to the nearest 10, 100 or 1000 Know how to solve number and practical problems that involve all of the above and with increasingly large positive numbers	Know how to interpret negative numbers in context Know how to round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 Know how to solve number problems and practical problems that involve all of the above	Know how to round any whole number to a required degree of accuracy Know how to use negative numbers in context, and calculate intervals across zero Know how to solve number and practical problems that involve all of the above

Addition & Subtraction					
	Year 2	Year 3	Year 4	Year 5	Year 6
Calculations	<p>Know how to add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <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 number 	<p>Know how to add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> ➤ a three-digit number and ones ➤ a three-digit number and tens ➤ a three-digit number and hundreds <p>Know how to add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p>	<p>Know how to add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate</p>	<p>Know how to add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p> <p>Know how to add and subtract numbers mentally with increasingly large numbers</p>	<p>Know how to perform mental calculations, including with mixed operations and large numbers</p> <p>Know how to use their knowledge of the order of operations to carry out calculations involving the four operations</p>
Problems	<p>Know how to solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> ➤ using concrete objects and pictorial representations, including those involving numbers, quantities and measures ➤ applying their increasing knowledge of mental and written methods 	<p>Know how to solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction</p>	<p>Know how to solve addition and subtraction twostep problems in contexts, deciding which operations and methods to use and why</p>	<p>Know how to solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why</p> <p>Know how to solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</p>	<p>Know how to solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why</p>

Multiplication & Division					
	Year 2	Year 3	Year 4	Year 5	Year 6
Recall/ Use	<p>Know and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</p> <p>Know multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p>	<p>Know and use multiplication and division facts for the 3, 4 and 8 multiplication tables</p>	<p>Know multiplication and division facts for multiplication tables up to 12×12 •</p> <p>Know how to 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</p> <p>Know how to and use factor pairs and commutativity in mental calculations</p>	<p>Know how to identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</p> <p>Know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers</p> <p>Know whether a number up to 100 is prime and recall prime numbers up to 19</p> <p>Know and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</p>	<p>Know how to common factors, common multiples and prime numbers</p> <p>Know how to estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy</p>
Calculations	<p>Know how to calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs</p>	<p>Know how to 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</p>	<p>Know how to multiply two-digit and three-digit numbers by a one-digit number using formal written layout</p>	<p>Know how to multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for twodigit numbers</p> <p>Know how to multiply and divide numbers mentally drawing upon known facts</p> <p>Know how to 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</p> <p>Know how to multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p>	<p>Know how to multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication</p> <p>Know how to 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</p> <p>Know how to 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</p> <p>Know how to perform mental calculations, including with mixed operations and large numbers</p>
Problems	<p>Know how to solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</p>	<p>Know how to solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects</p>	<p>Know how to 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>	<p>Know how to solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes</p> <p>Know how to solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates</p>	<p>Know how to solve problems involving addition, subtraction, multiplication and division</p>
Combined				<p>Know how to solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign</p>	<p>Know how to use their knowledge of the order of operations to carry out calculations involving the four operations</p>

Fractions					
	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise & write	Know, 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	Know how to 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 Know, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators Know and use fractions as numbers: unit fractions and non-unit fractions with small denominators	Know how to count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.	Know how to 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, $\frac{2}{5} + \frac{4}{5} = \frac{6}{5} = 1\frac{1}{5}$]	
Compare	Know the equivalence of $\frac{2}{4}$ and $\frac{1}{2}$	Know and show, using diagrams, equivalent fractions with small denominators compare and order unit fractions, and fractions with the same denominators	Know and show, using diagrams, families of common equivalent fractions	Know how to compare and order fractions whose denominators are all multiples of the same number	Know how to use common factors to simplify fractions; use common multiples to express fractions in the same denomination Know how to compare and order fractions, including fractions > 1
Calculations	Know how to write simple fractions for example, $\frac{1}{2}$ of 6 = 3	Know how to add and subtract fractions with the same denominator within one whole [for example, $\frac{5}{7} + \frac{1}{7} = \frac{6}{7}$]	Know how to add and subtract fractions with the same denominator	Know how to add and subtract fractions with the same denominator and denominators that are multiples of the same number Know how to multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Know how to add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions Know how to 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 $\frac{1}{3} \div 2 = \frac{1}{6}$]
Solve problems		Know how to solve problems that involve all of the above	Know how to 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		

Decimals					
	Year 2	Year 3	Year 4	Year 5	Year 6
Recognise, write & compare			<p>Know and write decimal equivalents of any number of tenths or hundredths</p> <p>Know and write decimal equivalents to $1/4$, $1/2$, $3/4$</p> <p>Know how to round decimals with one decimal place to the nearest whole number</p> <p>Know how to compare numbers with the same number of decimal places up to two decimal places</p>	<p>Know how to read and write decimal numbers as fractions [for example, $0.71 = 71/100$]</p> <p>Know and use thousandths and relate them to tenths, hundredths and decimal equivalents</p> <p>Know how to round decimals with two decimal places to the nearest whole number and to one decimal place</p> <p>Know how to read, write, order and compare numbers with up to three decimal places</p>	<p>Know the value of each digit in numbers given to three decimal places</p>
Fractions, decimals & percentages			<p>Know how to solve simple measure and money problems involving fractions and decimals to two decimal places</p>	<p>Know 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</p> <p>Know how to solve problems which require knowing percentage and decimal equivalents of $1/2$, $1/4$, $1/5$, $2/5$, $4/5$ and those fractions with a denominator of a multiple of 10 or 25</p>	<p>Know how to associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, $3/8$]</p> <ul style="list-style-type: none"> recall and use equivalences between simple fractions, decimals and percentages, including in different contexts



Know how to

Ratio & Proportion, Algebra					
	Year 2	Year 3	Year 4	Year 5	Year 6
Ratio & proportion					Know how to solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts Know how to solve problems involving the calculation/use of percentages for comparison Know how to solve problems involving similar shapes where the scale factor is known or can be found Know how to solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Algebra	Know how to recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems	Know how to solve problems, including missing number problems			Know how to use simple formulae Know how to generate and describe linear number sequences Know how to express missing number problems algebraically Know how to find pairs of numbers that satisfy an equation with two unknowns Know how to enumerate possibilities of combinations of two variables

Measurement					
	Year 2	Year 3	Year 4	Year 5	Year 6
Using measures	<p>Know how to 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</p> <p>Know how to compare and order lengths, mass, volume/capacity and record the results using >, < and =</p>	<p>Know how to measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml)</p>	<p>Know how to convert between different units of measure [for example, kilometre to metre; hour to minute]</p> <p>Know how to estimate, compare and calculate different measures</p>	<p>Know how to convert between different units of metric measure</p> <p>Know how to understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints</p> <p>Know how to use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling</p>	<p>Know how to solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 d.p. where appropriate</p> <p>Know how to 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 3 d.p.</p> <p>Know how to convert between miles and kilometres</p>
Money	<p>Know and use symbols for pounds (£) and pence (p); combine amounts to make a particular value</p> <p>Know how to find different combinations of coins that equal the same amounts of money</p> <p>Know how to solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change</p>	<p>Know how to add and subtract amounts of money to give change, using both £ and p in practical contexts</p>	<p>Know how to estimate, compare and calculate different measures, including money in pounds and pence</p>	<p>Know how to use all four operations to solve problems involving measure [for example, money]</p>	

Time	<p>Know how to compare and sequence intervals of time</p> <p>Know how to 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</p> <p>Know the number of minutes in an hour and the number of hours in a day</p>	<p>Know how to tell and write the time from an analogue clock, including using Roman numerals from I to XII, and 12- hour and 24-hour clocks</p> <p>Know how to 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, a.m./p.m., morning, afternoon, noon and midnight</p> <p>Know the number of seconds in a minute and the number of days in each month, year and leap year</p> <p>Know how to compare durations of events [for example to calculate the time taken by particular events or tasks]</p>	<p>Know how to read, write and convert time between analogue and digital 12- and 24-hour clocks</p> <p>Know how to solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days</p>	<p>Know how to solve problems involving converting between units of time</p> <p>Know how to use, read, write and convert between standard units, converting measurements of time from a smaller unit of measure to a larger unit, and vice versa</p>	
	Perimeter, Area & Volume		<p>Know how to measure the perimeter of simple 2-D shapes</p>	<p>Know how to measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres</p> <p>Know how to find the area of rectilinear shapes by counting squares</p>	<p>Know how to measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres</p> <p>Know how to calculate and compare the area of rectangles (including squares) and including using standard units, square centimetres (cm²) and square metres (m²) and estimate the area of irregular shapes</p> <p>Know how to estimate volume [for example, using blocks to build cuboids] and capacity [for example, using water]</p>

Geometry					
	Year 2	Year 3	Year 4	Year 5	Year 6
2-D shapes	<p>Know how to identify and describe the properties of 2-D shapes, including the number of sides and line symmetry in a vertical line</p> <p>Know how to identify 2-D shapes on the surface of 3-D shapes, [for example, a circle on a cylinder and a triangle on a pyramid]</p> <p>Know how to compare and sort common 2-D shapes and everyday objects</p>	<p>Know how to draw 2-D shapes</p>	<p>Know how to compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes</p> <p>Know how to identify lines of symmetry in 2-D shapes presented in different orientations</p>	<p>Know how to distinguish between regular and irregular polygons based on reasoning about equal sides and angles.</p> <p>Know how to use the properties of rectangles to deduce related facts and find missing lengths and angles</p>	<p>Know how to draw 2-D shapes using given dimensions and angles</p> <p>Know how to compare and classify geometric shapes based on their properties and sizes</p> <p>Know how to illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius</p>
3-D shapes	<p>Know how to recognise and name common 3-D shapes [for example, cuboids (including cubes), pyramids and spheres]</p> <p>Know how to compare and sort common 3-D shapes and everyday objects</p>	<p>Know how to make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them</p>		<p>Know how to identify 3-D shapes, including cubes and other cuboids, from 2-D representations</p>	<p>Know how to recognise, describe and build simple 3-D shapes, including making nets</p>
Angles & lines		<p>Know how to recognise angles as a property of shape or a description of a turn</p> <p>Know how to 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</p> <p>Know how to identify horizontal and vertical lines and pairs of perpendicular and parallel lines</p>	<p>Know how to identify acute and obtuse angles and compare and order angles up to two right angles by size</p> <p>Know how to identify lines of symmetry in 2-D shapes presented in different orientations</p> <p>Know how to complete a simple symmetric figure with respect to a specific line of symmetry</p>	<p>Know how to know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles</p> <p>Know how to draw given angles, and measure them in degrees</p> <p>Know how to identify: \sphericalangle angles at a point and one whole turn (total 360°) \sphericalangle angles at a point on a straight line and 1 2 a turn (total 180°) \sphericalangle other multiples of 90°</p>	<p>Know how to find unknown angles in any triangles, quadrilaterals, and regular polygons</p> <p>Know how to recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles</p>

Position & direction	<p>Know how to order and arrange combinations of mathematical objects in patterns and sequences</p> <p>Know how to 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 anticlockwise)</p>	<p>Know how to describe positions on a 2-D grid as coordinates in the first quadrant</p> <p>Know how to describe movements between positions as translations of a given unit to the left/right and up/down</p> <p>Know how to plot specified points and draw sides to complete a given polygon</p>	<p>Know how 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</p>	<p>Know how to describe positions on the full coordinate grid (all four quadrants)</p> <p>Know how to draw and translate simple shapes on the coordinate plane, and reflect them in the axes</p>
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Statistics					
	Year 2	Year 3	Year 4	Year 5	Year 6
Present & interpret data	Know how to interpret and construct simple pictograms, tally charts, block diagrams and simple tables	Know how to interpret and present data using bar charts, pictograms and tables	Know how to interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs	Know how to complete, read and interpret information in tables, including timetables	Know how to interpret and construct pie charts and line graphs and use these to solve problems
Solve statistical problems	<p>Know how to ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity</p> <p>Know how to ask and answer questions about totalling and comparing categorical data</p>	Know how to 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	Know how to solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs	Know how to solve comparison, sum and difference problems using information presented in a line graph	Know how to calculate and interpret the mean as an average