



## Year 4 Maths Scope and Sequence

### **Aim:**

Our aim is for all students to develop a mathematical mind and be able to tackle real life problems. Maths is organised into distinct strands; however, connections should continually be made across the mathematical curriculum to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. We teach a spiral curriculum maths where every strand is taught each term, the basics are revisited and when children are secure new concepts are introduced.

In Year 3 and Year 4 it is important that children become increasingly fluent with whole numbers and the 4 operations, including number facts and the concept of place value. Problem solving should also include simple fractions and decimals. By the end of year 4, pupils should have memorised their multiplication tables up to and including the 12-multiplication table and show precision and fluency in their work. Pupils should read and spell mathematical vocabulary correctly and confidently, using their growing word-reading knowledge and their knowledge of spelling.

A minimum of 5 hours of mathematics should be taught each week.

The mathematical strands for year 4 are:

- Number: Number & Place value
- Number: Addition and Subtraction
- Number; Multiplication and Division
- Number: Fractions (Including decimals)
- Measurements
- Geometry: Properties of Shape, Position & Direction
- Statistics



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<b>Number: Number &amp; Place value</b>			
All children	Most children	Some children	Numicon Ref
Read and write numbers beyond 1000 in numerals and words.	Read and write numbers beyond 100,000 in numerals and words.	Read, write, order, compare, estimate and check numbers to at least 1 000 000 and determine the value of each digit. To include partitioning, place value and inverse operations.	
Count in multiples of 6, 7, 9, 25 and 1,000	Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000.	Count forwards in steps of powers of 10 for any given number up to 10 000 000.  Count backwards in steps of powers of 10 for any given number up to 1 000 000.	Pattern and algebra 1.2 • 1.3 • 1.5 • 1.7 • 4.1 • 4.2  Numbers and the Number System 7.4  Calculating 5.5 • 6.4 • 6.6 • 7.6 • 10.3 • 12.4 • 12.5
Find 1,000 more or less than a given number	Find $\frac{1}{2}$ way between two given numbers.	Find $\frac{1}{4}$ way between two given numbers.	Numbers and the Number System 1.2 • 1.3 • 2.3 • 2.4 • 2.6  Calculating 1.5 • 1.6
Order and compare numbers beyond 1,000	Count backwards through 0 to include negative numbers	Order and compare positive and negative numbers.	Numbers and the Number System 2.1 • 2.2 • 2.3 • 2.4 • 2.6 • 4.1 • 4.2 • 4.3 • 4.5  Measurement 4.3
Recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones), including 0 as a place holder	Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1,000, including counting in 10s and 100s, and maintaining fluency in other multiples through varied and frequent practice using varied and increasingly complex problems.	Use knowledge of place value and addition and subtraction of two-digit numbers to derive sums and differences and doubles and halves of decimals (e.g. $6.5 + 2.7$ , half of 5.6, double 0.34).	Numbers and the Number System 1.3 • 1.4 • 1.5 • 1.6 • 2.4  Calculating 2.1 • 2.2 • 2.3 • 2.4 • 3.6 • 4.5 • 4.6  Measurement 2.2 • 3.6 • 4.3 • 5.2
Round any number to the nearest 10, 100 or 1000	Round 2 or 3 digit numbers in a variety of context e.g. money, measurement	Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000.	Numbers and the Number System 3.1 • 3.2 • 3.3 • 3.4 • 3.5 • 3.6 • 3.7 • 6.9  Calculating 1.2 • 3.3 • 4.3 • 4.7 • 8.7 • 9.1 • 9.3 • 12.4 • 12.6 • 13.5
Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value	Understand the historical context of Roman numerals - understand that there have been different ways to write whole numbers and that the important concepts of 0 and	Complete simple problems involving Roman numerals.	Numbers and the Number System 1.7



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### Number: Number & Place value

All children	Most children	Some children	Numicon Ref
	place value were introduced over a period of time.		
Extend their knowledge of the number system to include the decimal numbers e.g. tenths, hundredths that they have met so far.	Extend their knowledge of the number system to include the fractions that they have met so far e.g. $\frac{1}{4}$ $3\frac{1}{4}$	Begin to recognise equivalent fractions and decimals.	
<p><b>Problem solving:</b> Identify, represent and estimate numbers using different representations. Solve number and practical problems that involve all of the above and with increasingly large positive numbers.</p>			<p>Pattern &amp; Algebra 4.3 • 4.4</p> <p>Numbers and the Number System 1.1 • 1.2 • 1.3 • 2.3 • 2.5 • 3.1 • 3.2 • 3.3 • 3.5 • 4.3 • 4.6 • 5.1 • 6.1 • 6.2</p> <p>Calculating 1.1 • 1.2 • 1.4 • 1.5 • 1.6 • 1.7 • 2.1 • 2.2 • 2.3 • 3.3 • 3.6 • 3.7 • 4.3 • 4.4 • 4.5 • 4.6 • 4.7 • 6.6 • 7.6 • 12.4 • 12.5 • 14.1 • 14.2 • 14.3 • 14.4</p> <p>Measurement 2.2 • 4.1 • 4.2 • 4.3 • 4.4 • 5.3 • 5.4</p>



## Year 4 Maths Scope and Sequence

Number: Addition & Subtraction			
All children	Most children	Some children	Numicon Ref
<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate.</p> <p>Use their understanding of place value and partitioning.</p>	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</p> <p>Use their understanding of place value and partitioning.</p>	<p>Add and subtract whole numbers with 5 digits, including using formal written methods (column addition and subtraction).</p>	<p>Pattern &amp; Algebra 3.3 • 3.4 • 3.5</p> <p>Calculating 1.5 • 1.6 • 8.1 • 8.2 • 8.3 • 8.4 • 8.5 • 9.1 • 9.2 • 9.3 • 9.4 • 14.1 • 14.2 • 14.3 • 14.4</p>
<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> <li>a three-digit number and one digit number</li> <li>a three-digit number and multiple of 10 or 100</li> </ul>	<p>Add and subtract numbers mentally, including: a three-digit number and any two-digit number.</p>	<p>Add and subtract numbers mentally with 3 digits, across the tens and hundreds.</p>	
<p>Estimate the answer to a calculation and use inverse operations to check answers</p>	<p>Use knowledge of place value and addition and subtraction of two-digit numbers to derive sums and differences and doubles and halves of decimals (e.g. <math>6.5 + 2.7</math>, half of 5.6, double 0.34).</p>	<p>Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</p>	<p>Pattern &amp; Algebra 2.1 • 2.2 • 2.3 • 2.4 • 2.5 • 2.6 • 2.7 • 2.8</p> <p>Number &amp; the Number System 4.1</p> <p>Calculating 1.2 • 1.3 • 1.4 • 1.5 • 1.6 • 6.5</p>
<p><b>Problem solving:</b> Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. Practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100. Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.</p>			



**Number: Multiplication & Division**

All children	Most children	Some children	Numicon Ref
<p>Recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math></p> <p>(ensure these are all fluent)</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers</p>	<p>Recognise and use factor pairs and commutativity in mental calculations</p>	<p>Pattern &amp; Algebra 1.3 • 4.5 • 4.6</p> <p>Calculating 5.1 • 5.2 • 5.3 • 5.4 • 5.5 • 6.1 • 6.2 • 6.3 • 6.4 • 6.6 • 7.1 • 10.1 • 10.2 • 11.1 • 11.2 • 11.3 • 11.4</p>
<p>Multiply and divide two-digit and three-digit numbers by a one-digit number using formal written layout.</p> <p>Become fluent in the formal written method of short multiplication and short division with exact answers</p>	<p>Multiply and divide two-digit and three-digit numbers by a two-digit numbers using formal written layout, compact method.</p>	<p>Multiply numbers up to 4 digits by a one- or two- digit whole number using a formal written method, including long multiplication for two-digit numbers.</p>	<p>Calculating 10.4 • 10.5 • 12.1 • 12.2 • 12.3 • 12.4 • 12.5 • 12.6</p>
<p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</p>	<p>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 (non-prime) numbers.</p>	
<p>Practise mental methods and extend this to 3-digit numbers to derive facts, (for example <math>600 \div 3 = 200</math> can be derived from <math>2 \times 3 = 6</math>).</p>	<p>Write statements about the equality of expressions (for example, use the distributive law <math>39 \times 7 = 30 \times 7 + 9 \times 7</math> and associative law <math>(2 \times 3) \times 4 = 2 \times (3 \times 4)</math>). They combine their knowledge of number facts and rules of arithmetic to solve mental and written calculations for example, <math>2 \times 6 \times 5 = 10 \times 6 = 60</math>.</p>		
<p>Solve problems involving multiplying and adding, including using brackets to multiply two digit numbers by one digit e.g. <math>3 \times (2+4) = (3 \times 2) + (3 \times 4)</math>.</p>	<p>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>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>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p>	<p>Identify common factors and common multiples and prime numbers.</p>	
-	-	<p>Recognise and use square numbers and cube numbers, and the notation for squared and cubed.</p>	



**Number: Multiplication & Division**

All children	Most children	Some children	Numicon Ref
<p>Develop efficient mental methods, for example, using commutativity and associativity (for example, <math>4 \times 12 \times 5 = 4 \times 5 \times 12 = 20 \times 12 = 240</math>) and multiplication and division facts (for example, using <math>3 \times 2 = 6</math>, <math>6 \div 3 = 2</math> and <math>2 = 6 \div 3</math>) to derive related facts (<math>30 \times 2 = 60</math>, <math>60 \div 3 = 20</math> and <math>20 = 60 \div 3</math>).</p>	<p>Practise mental methods and extend this to 3-digit numbers to derive facts, (for example <math>600 \div 3 = 200</math> can be derived from <math>2 \times 3 = 6</math>).</p>	<p>Extend mental methods for whole number calculations, for example to multiply a two digit by a one digit number e.g. <math>12 \times 9</math>, to multiply by 25, to subtract one near multiple of 1000 from another e.g. <math>6070 - 4097</math>.</p>	
<p>To recognise how to input a calculation into a calculator.</p>	<p>To complete simple calculations on a calculator to check answers.</p>	<p>Use a calculator to solve problems, including those involving decimals or fractions e.g. to find <math>\frac{3}{4}</math> of 150g.</p>	
<p><b>Problem solving:</b>            Solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.             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 3 cakes shared equally between 10 children.             Solve number and practical problems that involve all four operations.</p>			<p>Calculating  <math>5.1 \bullet 5.2 \bullet 5.7 \bullet 5.8 \bullet 7.1 \bullet 7.5 \bullet 10.2 \bullet 10.3 \bullet 10.4 \bullet 10.5</math></p>



Number: Fractions (including decimals)			
All children	Most children	Some children	Numicon Ref
<p>Compare numbers with the same number of decimal places up to 2 decimal places. Round decimals with 1 decimal place to the nearest whole number.</p> <p>Understand the number system and decimal place value including relating the decimal notation to division of whole number by 10 and later 100.</p>	<p>Read, write, order and compare numbers with up to three decimal places.</p>	<p>Round decimals with two decimal places to the nearest whole number and to one decimal place.</p>	<p>Number &amp; the Number System 6.1 • 6.3 • 6.7 • 6.9 • 8.2 • 8.7</p>
<p>To add and subtract numbers up to 2 decimal places, doubling and halving decimals.</p>	<p>To add and subtract numbers up to 3 decimal places, doubling and halving decimals.</p>	<p>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</p>	<p>Number &amp; the Number System 8.1 • 8.2 • 8.3 • 8.4 • 8.5</p> <p>Calculating 7.3 • 7.5 • 7.6 • 7.7</p>
<p>Recognise fractions in the context of parts of a whole, numbers, measurements, a shape, and unit fractions as a division of a quantity.</p>	<p>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. Find equivalent fractions (e.g. <math>\frac{7}{10} = \frac{14}{20}</math> or <math>\frac{19}{10} = 1 \frac{9}{10}</math>) relate fractions to their decimal representations.</p>	<p>Use common factors to simplify fractions; use common multiples to express fractions in the same denomination.</p>	
<p>Recognise and show, using diagrams, families of common equivalent fractions.</p>	<p>Make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example, <math>\frac{6}{9} = \frac{2}{3}</math>)</p> <p><math>\frac{1}{4} = \frac{2}{8}</math></p>	<p>Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements <math>&gt; 1</math> as a mixed number.</p>	<p>Number &amp; the Number System 5.2 • 5.3 • 5.4 • 7.1 • 7.2 • 7.4 • 7.5 • 8.2</p>



Number: Fractions (including decimals)			
All children	Most children	Some children	Numicon Ref
Add and subtract fractions with the same denominator.	Add and subtract fractions, including greater than 1 through a variety of increasingly complex problems to improve fluency.	Add and subtract fractions with the same denominator and denominators which are multiples of the same number.  Understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths	Number & the Number System 5.3 • 5.4 • 5.5 • 5.6
Recognise and write decimal equivalents of any number of tenths or hundredths.  Recognise and write decimal equivalents to $\frac{1}{4}$ $\frac{1}{2}$ $\frac{3}{4}$	Read and write decimal numbers as fractions for example  $0.71 = \frac{71}{100}$	Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate (for example,  $\frac{6}{9} = \frac{2}{3}$  $\frac{1}{4} = \frac{2}{8}$	Number & the Number System 6.1 • 6.4 • 6.7 • 8.1 • 8.2 • 8.3 • 8.4 • 8.5 • 8.7
Count using simple fractions and decimals, both forwards and backwards.  Compare and order unit fractions, and fractions with the same denominators	Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten.  Connect hundredths to tenths and place value and decimal measure.	Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents.	Number & the Number System 7.5 • 8.1 • 8.2 • 8.3
Extend the use of the number line to connect fractions, numbers and measures.	Solve simple measure and money problems involving fractions and decimals to 2 decimal places	Understand that decimals and fractions are different ways of expressing numbers and proportions.  Represent numbers with 1 or 2 decimal places in in several ways.	Number & the Number System 6.1 • 6.6 • 6.7 • 8.3 • 8.4 • 8.5 • 8.6  Measurement 2.1
Find fractions using division (e.g. 1/100 of 5kg) and percentages of numbers (e.g. 10%, 5%, 15% of £80) multiples of 5.	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.	Solve problems which require knowing decimal equivalents of $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{5}$ , $\frac{2}{5}$ , $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25.	Number & the Number System 5.1 • 5.2 • 5.3 • 5.4 • 5.5 • 5.6 • 7.4 • 7.5  Calculating 11.5



## Year 4 Maths Scope and Sequence

Measurements			
All children	Most children	Some children	Numicon Ref
Tell the time using analogue and digital clocks, answering in 12-hour and 24-hour times.	Read, write and convert time between analogue and digital 12- and 24-hour clocks	Solve problems involving converting between units of time e.g. from hours to minutes; minutes to seconds; years to months; weeks to day and timetables.	Measurement 1.1 • 1.5 • 1.6 • 1.7
Become fluent in recognising the value of coins.  Add and subtract amounts of money to give change, using both £ and p in practical contexts (multiples of 2, 5, 10).	Adding and subtracting amounts, including mixed units, and giving change. Record £ and p separately.	Formal decimal recording of money. Estimate, compare and calculate different measures, including money in pounds and pence (more complex numbers)	
Measure, compare, add and subtract: lengths (m/cm/mm); mass (kg/g); volume/capacity (l/ml).  Build on understanding of place value and decimal notation to record metric measures, including money.	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).	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 two decimal places.	
Convert between different units of measure [for example, kilometre to metre; hour to minute]	Use multiplication to convert from larger to smaller units.	Convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre]	Measurement 1.4 • 1.5 • 1.6 • 1.7 • 2.1 • 2.2 • 3.6 • 5.1 • 5.2 • 5.3 • 5.4
Measure lines to the nearest millimetre and centimetre	Draw and measure lines to the nearest millimetre.	Measure lines to the nearest millimetre, that do not start at 0 (eg. length from 3.4cm to 5.1cm = 17mm).	
Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres	Use formula to calculate perimeter e.g. expressed algebraically as $2(a + b)$ where a and b are the dimensions in the same unit.	Measure and calculate the perimeter of regular and irregular polygons.	Measurement 6.1 • 6.2 • 6.3 • 6.6
Find the area of rectilinear shapes by counting squares	Calculate the area of composite rectilinear shapes.	Calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm <sup>2</sup> ) and square metres (m <sup>2</sup> ), and estimate the area of irregular shapes	Measurement 6.4 • 6.5



## Year 4 Maths Scope and Sequence

Measurements			
All children	Most children	Some children	Numicon Ref
<p>Problem solving:            Estimate, compare and calculate different measures, including money in pounds and pence.            Use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling.</p>			<p>Calculating            8.7 • 9.5 • 12.5 • 13.4 • 14.1</p> <p>Measurement            1.1 • 1.3 • 1.4 • 1.5 • 1.6            • 1.7 • 2.1 • 2.2 • 2.5 • 2.6 •            3.1 • 3.2 • 3.3 • 3.4 • 3.6 •            4.1 • 4.2 • 4.3 • 4.4 • 5.1 •            5.2 • 5.3 • 5.4</p>

Geometry Properties of Shape			
All children	Most children	Some children	Numicon Ref
Compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes.	Identify, visualise and describe properties of rectangles, triangles and regular polygons.	Classifying different triangles (for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium).	Geometry 1.1 • 1.2 • 1.4 • 3.1 • 3.2 • 3.3
Use knowledge of properties to draw 2D shapes.	Identify, visualise and describe properties (faces, edges, vertices) of 3D solid shapes.	Identify and draw nets of 3D shapes.	
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.	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.	Geometry 2.1 • 2.2 • 2.3 • 2.4 • 2.5 • 2.6 • 4.4
Identify acute and obtuse angles and compare and order angles up to 2 right angles by size.	Know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles.	Use degrees as a measurement of angles – recognise 180° is a straight line, 90° is a right angle, 360° a full circle.	Geometry 1.1 • 3.1 • 3.2 • 3.3
Compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular.	Identify: <ul style="list-style-type: none"> <li>• angles at a point and one whole turn (total 360°)</li> <li>• angles on a straight line and a half turn (total 180°)</li> <li>• other multiples of 90° (e.g. right angle)</li> </ul>	Draw given angles, and measure them in degrees (°).	



## Year 4 Maths Scope and Sequence

<b>Geometry Position &amp; Direction</b>			
All children	Most children	Some children	Numicon Ref
Describe positions on a 2-D grid as coordinates in the first quadrant	Plot specified points and draw sides to complete a given polygon	Draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of co-ordinates, for example (2, 5), including using co-ordinate-plotting ICT tools	Geometry 4.1 • 4.2 • 4.3
Describe movements between positions as translations of a given unit to the left/right and up/down	Identify, describe and represent the position of a shape following a translation, using the appropriate language.	Identify, describe and represent the position of a shape following a translation, using the appropriate language, and know that the shape has not changed.	Geometry 4.2
Revise: Recognise and identify compass points – N, E, S, W	Revise: Recognise and identify 8 compass points.	Revise: To use co-ordinates and compass points to describe a route on a grid.	

<b>Statistics</b>			
All children	Most children	Some children	Numicon Ref
Interpret and present data using bar charts, pictograms and tables.	Collect, interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs.	Begin to relate the graphical representation of data to recording change over time.	Measurement 1.8 • 3.2 • 3.5
Complete, read and interpret information in tables and other graphs.	Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.	Solve comparison, sum and difference problems using information presented in a line graph.	Measurement 1.5 • 1.7 • 1.8 • 2.3 • 2.4 • 5.2
Understand and use a greater range of scales in their representations.	Interpret a reading that lies between two unnumbered divisions on a scale (integers).	Interpret a reading that lies between two unnumbered divisions on a scale (up to 2 dp).	
-	-	Find and interpret the mode of a set of data.	
-	-	Determine the probability of an event. Describe the occurrence of familiar events using the language of chance or likelihood.	
<b>Problem solving</b> Answer a set of related questions by collecting, selecting and organising relevant data; draw conclusions, using computing to present features, and identify further questions to ask.			