

## Maths Curriculum Map – Year 5

Year 5 Autumn	
Number & Place Value	<p>Solve number and practical problems involving:</p> <ul style="list-style-type: none"> <li>• Read, write, order and compare numbers to at least 100,000 and determine the value of each digit.</li> <li>• Identify, represent and estimate numbers using different representations including number-lines</li> <li>• Round any number to the nearest 10,100,1000, 10,000 and 100,000 (represent on a number line)</li> </ul>
Addition and Subtraction with length	<p>Add and subtract whole numbers with more than 4 digits. Represent solutions appropriately using informal and formal written methods.</p> <ul style="list-style-type: none"> <li>• Add and subtract mentally with increasingly large numbers e.g. <math>12,462 - 2300 = 10,612</math></li> <li>• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>• Measure and calculate the perimeter of composite rectilinear shapes in cm and m</li> <li>• Use all four operations to solve problems involving measure (length), using decimal notation.</li> </ul>
Multiplication and division with area and arrays	<p>Represent multiplication and division facts as grid arrays, link to rectangular areas, identifying factors as whole number side lengths of rectangles.</p> <ul style="list-style-type: none"> <li>• Calculate and compare the area of rectangles, including squares, and including using standard units (cm<sup>2</sup> and m<sup>2</sup>) and estimate the area of irregular shapes.</li> <li>• 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.</li> <li>• Use place value knowledge to multiply and divide whole numbers and those involving decimals by 10 and 100.</li> <li>• Use knowledge of multiples to estimate division calculations e.g. <math>1075 \div 25 \approx 40</math> (since <math>4 \times 25 = 100</math>).</li> <li>• Understand division as grouping, moving on from sharing, to make efficient use of multiplication facts when dividing.</li> <li>• Represent division calculations (not the solution) as number-lines and bar models to support conceptual understanding before solving</li> </ul>
Fractions	<p>identify, name, and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <ul style="list-style-type: none"> <li>• Add and subtract fractions with the same denominator</li> <li>• Compare and order fractions whose denominators are all multiples of the same number</li> </ul>
Fractions	<p>Recognise mixed numbers and improper fractions and convert from one form to another.</p> <ul style="list-style-type: none"> <li>• Write mathematical statements <math>&gt;1</math> as a mixed number e.g. <math>2/5 + 4/5 = 6/5 = 1 \frac{1}{5}</math></li> <li>• Add and subtract fractions with the same denominator beyond 1 and multiples of the same number.</li> </ul>

	<ul style="list-style-type: none"> <li>Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> </ul>
Measurement (time)	<p>Complete, read and interpret information in tables, including time tables</p> <ul style="list-style-type: none"> <li>Solve problems involving converting between units of time.</li> </ul>
Geometry (shape and angle)	<ul style="list-style-type: none"> <li>Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>Know angles are measured in degrees: estimate and compare acute, obtuse, and reflex angles</li> <li>Identify angles at a point and one whole turn (<math>360^\circ</math>), at a point on a straight line and half a turn (<math>180^\circ</math>) and other multiples of <math>90^\circ</math>. Know that there are four right angles in a complete turn and two right angles in half a turn.</li> <li>Identify, describe, and represent the position of a shape following a reflection or a translation, using the appropriate language and know that the shape has not changed, and internal angles are preserved</li> </ul>
NPV with measurement (mass and capacity)	<p>Round decimals with two decimal places to the nearest whole number and to one decimal place</p> <ul style="list-style-type: none"> <li>Convert between different units of metric measure (g/kg ; ml/l) Link to place value understanding of scaling up and down by 1000 (<math>\times / \div</math>)</li> <li>Estimate capacity using standard units to measure liquid (l/ml) and read scales graded in different sized steps (e.g. 0, 10,20,30.... 0 , 25 , 50 , 75....0, 20, 40,60...)</li> <li>Understand and use equivalences between metric units and common imperial units such as inches, pounds and pints</li> </ul>
All four operations	<p>Use all four operations to solve problems involving measure (mass and capacity) using decimal notation including scaling.</p> <ul style="list-style-type: none"> <li>Use any combination of operations to solve problems , including understanding the meaning of the equals sign (=)</li> <li>Know that distributivism can be expressed as <math>a(b + c) = ab + ac</math>. (e.g. <math>13 \times 8 = 8(10 + 3)</math>)</li> <li>Understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, <math>4 \times 35 = 2 \times 2 \times 35</math>; <math>3 \times 270 = 3 \times 3 \times 9 \times 10 = 92 \times 10</math>).</li> <li>Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example, <math>13 + 24 = 12 + 25</math>; <math>33 = 5 \times ?</math> ).</li> <li>Multiply numbers up to 4-digits by a one-or two-digit number using a written method that supports conceptual understanding.</li> </ul>
<b>Year 5 Spring</b>	
Fractions and percentages	<p>Know that <math>1/10 = 0.1</math> and <math>1/100 = 0.01</math></p> <ul style="list-style-type: none"> <li>Recognise the percent symbol (%) and understand that percent relates to the number of parts per 100, write percentages as a fraction with the denominator 100 and as a decimal fraction</li> <li>Solve problems which require knowing percentage and decimal equivalents of <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{5}</math>, <math>\frac{2}{5}</math>, <math>\frac{4}{5}</math></li> <li>Identify, name, and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</li> <li>Read and write decimal numbers as fractions (e.g. <math>0.71 = 71/100</math>)</li> </ul>

	<ul style="list-style-type: none"> <li>• Recognise and use thousandths and relate them to tenths, hundredths, and decimal equivalents</li> <li>• Round decimals with two decimal places to the nearest whole number and to one decimal place.</li> </ul>
Geometry and angles	<p>Know angles are measured in degrees: estimate and compare acute, obtuse, and reflex angles</p> <ul style="list-style-type: none"> <li>• Draw given angles, and measure them in degrees (<math>^{\circ}</math>)</li> <li>• Use the properties of rectangles to deduce related facts and find missing lengths and angles</li> </ul>
Subtraction and addition with whole numbers and fractions	<ul style="list-style-type: none"> <li>• Add and subtract whole numbers with more than 4 digits.</li> </ul> <p>Represent solutions appropriately using informal and formal written methods.</p> <ul style="list-style-type: none"> <li>• Add and subtract mentally with increasingly large numbers e.g. <math>2,462 - 2300 = 10,612</math></li> <li>• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>• Add and subtract fractions with the same denominator beyond one and multiples of the same number. Use diagrams such as bar models to show part-part-whole relationships</li> <li>• Solve problems involving number up to three decimal places.</li> <li>• Use addition and subtraction to solve problems involving measure using decimal and fraction notation. E.g. <math>\frac{3}{4} \text{ m} + 50 \text{ cm} = 1.25 \text{ m}</math> (or <math>1 \frac{1}{4} \text{ m}</math>)</li> </ul>
Statistics with negative numbers	<p>Interpret negative numbers in context, count forwards and backwards with positive and negative numbers through zero (link number-line to a thermometer)</p> <ul style="list-style-type: none"> <li>• Solve comparison, sum and difference problems using information presented in a line graph</li> <li>• Complete, read and interpret information in tables</li> </ul>
Measurement (volume, capacity, metric and imperial)	<p>Understand and use equivalences between metric units and common imperial units such as inches, pounds, and pints.</p> <ul style="list-style-type: none"> <li>• Estimate volume (e.g. using <math>1\text{cm}^3</math> blocks to build cubes and cuboids) and capacity (e.g. using water)</li> <li>• Identify 3-D shapes, including cubes and other cuboids, from 2-D representations</li> <li>• Construct 3-D models of cubes and cuboids from nets and estimate their volume, using <math>1\text{cm}^3</math> blocks to build cubes and cuboids to support understanding of volume.</li> <li>• Multiply three numbers together, understanding that this can be done in any order and link this to the volume of cubes and cuboids.</li> <li>• Solve problems involving capacity, including reading a range of scales.</li> </ul>
Fractions	<p>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</p> <ul style="list-style-type: none"> <li>• Solve problems which require knowing percentage and decimal equivalents, including those with a denominator of a multiple of 10 or 25.</li> <li>• Read, write, order and compare numbers with up to three decimal places</li> <li>• Solve problems involving number up to three decimal places</li> </ul>
Addition and Subtraction (focus on mental strategies)	<p>Add and subtract mentally with increasingly large numbers.</p> <p>Develop independence and fluency with identifying calculations that can be done mentally. Strategies include 'nearly numbers', near-doubles', place-value, key facts and derived facts, part-whole reasoning and so on.</p>

	<ul style="list-style-type: none"> <li>• Add and subtract whole numbers with more than 4 digits. Represent solutions appropriately using informal and formal written methods.</li> <li>• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>• Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> <li>• Add and subtract fractions with the same denominator beyond one and multiples of the same number. Use diagrams such as bar models to show part-part-whole relationships</li> <li>• Solve problems involving number up to three decimal places.</li> <li>• Solve problems involving measure.</li> </ul>
Multiplication and division (tables and related facts)	<ul style="list-style-type: none"> <li>• Multiply numbers up to 4-digits by a one- or two- digit number, drawing upon known facts</li> <li>• Divide numbers up to 4-digits by a one- digit number, introducing short division and interpreting remainders appropriately for the context</li> <li>• Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000.</li> <li>• Solve problems involving multiplication and division, including using their knowledge of factors and multiples</li> <li>• Solve problems involving multiplication and division, including scaling by simple fractions.</li> </ul>
<b>Year 5 Summer</b>	
Multiplication and division including square, cube and prime numbers	<p>Identify multiples and factors, including all factor pairs of a number and common factors of two numbers.</p> <ul style="list-style-type: none"> <li>• Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Construct arrays to show that prime numbers (p) have exactly one array (1 x p)</li> <li>• Recognise and use square numbers and cube numbers and the notation for (2) and (3). Construct arrays for square numbers to show that square numbers have an odd number of factors since one is repeated (e.g. 16 can be constructed as 1 x 16; 2 x 8 and 4 x 4 ~ factors are 1,2,4,8,16)</li> <li>• Solve problems involving all four operations including using their knowledge of factors and multiples, squares and cubes.</li> </ul>
Geometry (position and direction)	<p>Plot points on a coordinate grid in the first quadrant</p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Distinguish between regular and irregular polygons based on reasoning about equal sides and angles</li> </ul>
All four operations (mixed problem solving)	<p>Solve multi-step problems involving all four operations in context, deciding which operations and methods (including mental and efficient jottings and diagrams) to use and why.</p> <ul style="list-style-type: none"> <li>• Use a range of appropriate numbers to solve problems in context. This should include whole numbers and part numbers (fractions, decimals, percentages)</li> <li>• Solve estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy (interpret remainders and rounding).</li> </ul>
Addition and subtraction (secure formal methods)	<ul style="list-style-type: none"> <li>• Add and subtract whole numbers with more than 4 digits, including using formal written methods</li> <li>• Add and subtract mentally with increasingly large numbers (e.g. <math>12,462 - 2,300 = 10,612</math>)</li> </ul>

	<ul style="list-style-type: none"> <li>• Use rounding to check answers and determine, in the context of a problem, levels of accuracy</li> <li>• Solve addition and subtraction multi-step problems in contexts deciding which operations to use and why</li> <li>• Solve comparison, sum and difference problems using information presented in a line graph</li> <li>• Complete, read and interpret information in tables.</li> </ul>
Fractions and geometry	<p>Compare and order, add and subtract fractions whose denominators are all multiples of the same number.</p> <ul style="list-style-type: none"> <li>• Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths</li> <li>• Recognise mixed numbers and improper fractions and convert from one form to the other. Write mathematical statements <math>&gt;1</math> as a mixed number (e.g. <math>2/5 + 4/5 = 6/5 = 1 \frac{1}{5}</math> )</li> <li>• Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams</li> <li>• Know angles are measured in degrees: estimate and compare acute, obtuse, and reflex angles</li> <li>• Draw given angles and measure them in degrees</li> <li>• Identify angles at a point and one whole turn (<math>360^\circ</math> )</li> <li>• Identify angles at a point on a straight line and <math>\frac{1}{2}</math> a turn (<math>180^\circ</math> )</li> <li>• Identify other multiples of <math>90^\circ</math> and link to fractions of a whole turn</li> <li>• Use the properties of rectangles to deduce related facts and find missing lengths and angles</li> </ul>
Percentages	<p>Recognise the per cent symbol (%) and understand that it relates to the 'number of parts per 100'</p> <ul style="list-style-type: none"> <li>• Write percentages as a fraction with 100 as the denominator and as a decimal fraction.</li> <li>• Solve problems which require knowing percentage and decimal equivalents.</li> <li>• Solve problems involving simple percentages (multiples of 10%, include 1% and 50% ~ link to division by 10, 100 and 2)</li> </ul>
Multiplication and division (secure formal methods)	<ul style="list-style-type: none"> <li>• Identify multiples and factors</li> <li>• Establish whether a number is prime up to 100 and recall prime numbers up to 19</li> <li>• Multiply numbers up to 4-digits by a one-or two-digit number using a formal written method</li> <li>• 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</li> <li>• Multiply and divide whole numbers and those involving decimals by 10, 100, 1000</li> <li>• Recognise and use square number and cube numbers, with the correct notation (2) and (3)</li> <li>• Solve problems involving all four operations, including any combination of these.</li> <li>• Solve problems involving multiplication and division, including scaling by simple fractions (half as big) and problems involving simple rates</li> </ul>
All four operations with decimals and measure	<p>Convert between different units of metric measure (km/m; cm/m; cm/mm; g/kg; l/ml)</p> <ul style="list-style-type: none"> <li>• Understand equivalences between metric units and common imperial units (inches, pounds, pints)</li> <li>• Solve problems involving converting between units of time</li> <li>• Complete, read and interpret information in timetables</li> </ul> <p>Measure and calculate the perimeter of composite rectilinear shapes in cm and m</p>

	<ul style="list-style-type: none"><li>• Calculate and compare the area of rectangles (including squares) , using standard units (cm<sup>2</sup> and m<sup>2</sup>)</li><li>• Estimate the area of irregular shapes</li><li>• Estimate volume using 1cm<sup>3</sup> blocks to build cubes and cuboids</li><li>• Estimate capacity (e.g. using water)</li><li>• Use all four operations to solve problems involving measure using decimal notation including scaling</li><li>• Read, write , order, and compare numbers with up to three decimal places</li><li>• Solve problems involving numbers with up to three decimal places</li><li>• Read and write decimal numbers as fractions (e.g. 0.71 = 71/100)</li><li>• Round decimals with two decimal places to one decimal place and to the nearest whole number</li></ul>
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