

# Year 7 Mathematics Mastery Programme of Study

## Autumn 1: Place value, addition and subtraction

Unit 1: place value (1)	<ul style="list-style-type: none"> <li>Read and write whole numbers in figures and words</li> <li>Multiply, and divide, any whole number by 10, 100, 1000, or 10 000</li> <li>Round whole numbers to the nearest 1000, 100 or 10</li> </ul>
Unit 2 & 3: Addition and subtraction (2)	<ul style="list-style-type: none"> <li>Use mental strategies</li> <li>Add and subtract using formal algorithms</li> <li>Calculate and work with <b>perimeters</b></li> <li>Model solve word problems</li> </ul>
Unit 4: Addition and subtraction of decimals (2)	<ul style="list-style-type: none"> <li>Understand decimal notation and place values</li> <li>Read and write decimals in figures and words</li> <li>Convert between decimals and fractions where the denominator is a factor of 10 or 100</li> <li>Use the number line to display decimals and round decimals to the nearest whole number, to 1 or 2 decimal places</li> <li>Use correctly the symbols <math>&lt;</math>, <math>&gt;</math> etc. and the associated language to order a set of decimals</li> <li>Multiply and divide decimals by 10, 100, 1000, or 10 000</li> <li>Solve word problems involving the addition and subtraction of money in decimal notation</li> <li>Use written methods in column format for addition and subtraction of decimals</li> <li>Extend existing mental calculation to include decimals</li> <li>Calculate the <b>perimeter</b> of rectangles, squares and rectilinear figures</li> </ul>

## Autumn 2: Multiplication and division

Unit 5, 6, 7 & 8: multiplication and division (5)	<ul style="list-style-type: none"> <li>Use multiplication facts to solve mental calculations</li> <li>Use the terms 'product', 'multiple' and 'LCM'</li> <li>Understand and use the column method to multiply integers and decimals</li> <li>Divide whole numbers and decimals by whole numbers</li> <li>Use the terms 'quotient', 'remainder', 'factor', 'HCF'</li> <li>Represent multiplication word problems using bar models</li> <li>Find the <b>area</b> of a rectangle and triangle</li> <li>Solve problems involving length, perimeter and area</li> <li>Estimate answers in calculations and check that results are reasonable</li> <li>Measure <b>time</b>, calculate with time and solve time word problems</li> <li>Find the <b>mean average</b>, interpreting average as "total amount <math>\div</math> number of items" and solve word problems involving average</li> </ul>
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## Spring 1: 2D shapes

Unit 9: Working with units (1)	<ul style="list-style-type: none"> <li>Record and order measurements using decimal notation</li> <li>Estimate and/or measure: <ul style="list-style-type: none"> <li>length in kilometres (km) /metres (m)/ centimetres (cm)/ millimetres (mm)</li> <li>mass in kilograms (kg) /grams (g)</li> <li>volume of liquid in litres (l) / millilitres (ml)</li> </ul> </li> </ul>
Unit 10: Angles (1)	<ul style="list-style-type: none"> <li>Draw and measure acute and obtuse angles reliably to the nearest degree</li> <li>Estimate the size of any given angle</li> <li>Recognise acute, right, obtuse and reflex angles</li> <li>Know and use the fact that the angles round a point total <math>360^\circ</math>, that angles on a straight line total <math>180^\circ</math>, and that vertically opposite angles are equal</li> </ul>
Unit 11 & 12: Triangles and quadrilaterals (2)	<ul style="list-style-type: none"> <li>Classify triangles and quadrilaterals according to their properties</li> <li>Use a ruler and protractor to construct triangles and quadrilaterals from given data</li> <li>Know and use the fact that the sum of interior angles of a triangle is <math>180^\circ</math></li> <li>know and use the fact that the interior angles of a quadrilateral sum to <math>360^\circ</math></li> <li>Solve problems involving coordinates in the first quadrant</li> </ul>
Unit 13: Symmetry and tessellation (1)	<ul style="list-style-type: none"> <li>Identify lines of symmetry in any shape</li> <li>Identify the order of rotational symmetry in any shape</li> <li>Create shapes given details of their symmetries</li> <li>Investigation and create tessellations</li> </ul>

## Spring 2: Fractions

Unit 14: Understand and use fraction (2)	<ul style="list-style-type: none"> <li>Represent fractions using area diagrams, bar models and number lines</li> <li>Recognise and name equivalent fractions</li> <li>Convert fractions to decimals</li> <li>Convert terminating decimals to fractions in their simplest form</li> <li>Convert between mixed numbers and improper fractions</li> <li>Compare and order numbers</li> <li>Convert simple fractions and decimals to percentages</li> <li>Express one quantity as a fraction of another</li> </ul>
Unit 15: Fractions of amounts (1)	<ul style="list-style-type: none"> <li>Find a fraction of a set of objects or quantity</li> <li>Find the whole given a fraction</li> </ul>
Unit 16: Multiplying and dividing decimals (2)	<ul style="list-style-type: none"> <li>Multiply a whole number or fraction by a whole number or fraction</li> <li>Multiply a mixed number and a whole number</li> <li>Divide a whole number or proper fraction by a whole number or proper fraction</li> </ul>

## Summer 1: Algebra

Unit 17: Order of operations (2)	<ul style="list-style-type: none"> <li>Carry out combined operations involving all four operations</li> <li>Understand and use brackets</li> <li>Use simple index notation</li> </ul>
Unit 18: Introduction to algebra (2)	<ul style="list-style-type: none"> <li>Recognise and continue sequences</li> <li>Represent an unknown number using a letter</li> <li>Write and understand simple algebraic expressions</li> <li>Substitute numerical values into formulae and expressions</li> <li>Collect like terms and simplify expressions</li> <li>Multiply out brackets, identify and take out common factors to factorise</li> <li>Recognise that different-looking expressions may be identical and prove simple algebraic identities</li> </ul>

Unit 19: Algebraic generalisation project

## Summer 2: Percentages and handling data

Unit 20: Percentages (2)	<ul style="list-style-type: none"> <li>Understand percentage as a fractional operator with denominator of 100</li> <li>Express a part of a whole as a percentage</li> <li>Convert between fractions, decimals and percentages</li> <li>Find fractions and percentages of given quantities</li> <li>Find the whole given a part and the percentage</li> <li>Increasing and decreasing by a percentage</li> </ul>
Unit 21: Handling data (2)	<ul style="list-style-type: none"> <li>Understand the difference between types of data</li> <li>Construct and interpret <ul style="list-style-type: none"> <li>Tables (including tally and two way)</li> <li>Bar charts (including comparative and composite)</li> <li>Pictograms</li> <li>Line graphs</li> </ul> </li> <li>Read and interpret pie charts</li> <li>Draw pie charts from raw data</li> <li>Explore misleading graphical representations</li> </ul>