

# Maths Year 8 Curriculum overview

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<b>Learning Focus</b>	<b>Assessments</b>
<b>Unit 1: Factors, Multiples and Primes</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Recall multiplication facts up to 12x12.</li> <li>• Recognise and use multiples of 2, 3, 4, 5, 8, 10, 50 and 100.</li> <li>• Identify all factors of a number.</li> <li>• List multiples of numbers.</li> <li>• Identify prime numbers less than 100.</li> <li>• Identify square and cube numbers.</li> <li>• Find triangle numbers.</li> <li>• Identify if a given number is prime.</li> <li>• Find the prime factors of numbers.</li> <li>• Find the prime factor decomposition of a number, including the use of index notation.</li> <li>• Find and use the lowest common multiple.</li> <li>• Find and use the highest common factor.</li> <li>• Find reciprocals.</li> <li>• <b>Using finding the lowest common multiple to solve real life problems.</b></li> <li>• <b>Use prime factor decomposition to find the highest common factor and lowest common multiple.</b></li> <li>• <b>Use prime factor decomposition to decide whether a number is square etc.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 2: Algebraic Expressions</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Know the definitions of the words term, expression, formula, and equation.</li> <li>• Forming simple algebraic expressions from a one-step function machine.</li> <li>• Understand that algebraic operations follow the rules of arithmetic.</li> <li>• Simplify algebraic expressions by collecting like terms.</li> <li>• Forming simple algebraic expressions and formulae from words.</li> <li>• Form algebraic expressions and formulae from a range of scenarios.</li> <li>• Multiply a single term over a bracket.</li> <li>• Factorise a linear expression.</li> <li>• <b>Form expressions and formulae from complex worded problems.</b></li> <li>• <b>Forming quadratic expressions.</b></li> <li>• <b>Expand two brackets.</b></li> <li>• <b>Factorise quadratic expressions.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>

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<b>Unit 3: Indices</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Recognise and use square and cube numbers.</li> <li>• Use the notation for squared and cubed.</li> <li>• Evaluate square and cube roots.</li> <li>• Evaluate simple indices (e.g. <math>2^4</math>, <math>3^5</math>).</li> <li>• Know that anything raised to the power of 0 is equal to 1.</li> <li>• Use index laws to simplify algebraic and numerical expressions.               <ul style="list-style-type: none"> <li>○ multiplication</li> <li>○ division</li> <li>○ brackets</li> </ul> </li> <li>• <b>Evaluate negative and fractional indices.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 4: Negative Numbers</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Appreciation of the number line extending below zero.</li> <li>• Work with negative numbers in context.</li> <li>• Identifying the larger of two integers.</li> <li>• Order integers.</li> <li>• Add and subtract a positive number to/from a negative integer.</li> <li>• Add and subtract a negative number to/from a positive integer number.</li> <li>• Multiply and divide integers.</li> <li>• <b>Solve problems involving negative numbers.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 5: Place Value</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Read, write, order, and compare numbers up to 1,000.</li> <li>• Recognise place value in three-digit numbers.</li> <li>• Convert between words and figures.</li> <li>• Find 10 or 100 more or less than a given number.</li> <li>• Order integers.</li> <li>• Interpret the value of a digit in a decimal.</li> <li>• Develop strategies for mental addition and subtraction of integers.</li> <li>• Multiply and divide by positive powers of ten.</li> <li>• Order decimals.</li> <li>• Interpret the value of a digit in a decimal.</li> <li>• Count on in steps of 0.1, 0.01, ...</li> <li>• Develop strategies for mental addition and subtraction of decimals.</li> <li>• Multiply and divide by negative powers of ten.</li> <li>• <b>Multiply and divide decimals.</b></li> <li>• <b>Convert between ordinary numbers and standard form.</b></li> <li>• <b>Order numbers given in standard form.</b></li> <li>• <b>Investigate terminating and recurring decimals.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>

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<b>Unit 6: 2D Shapes</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Recognise and name 2D shapes, including polygons, triangles and quadrilaterals.</li> <li>• Use and understand positional vocabulary.</li> <li>• Describe the properties of 2D shapes, including straight and curved edges.</li> <li>• Recognise parallel and perpendicular lines in grids and shapes.</li> <li>• Identify congruent shapes.</li> <li>• Identify regular polygons.</li> <li>• Identify and understand linear and rotational symmetry.</li> <li>• Classify polygons by their properties.</li> <li>• Use correct vocabulary, notation, and labelling conventions.</li> <li>• Tessellate a shape and understand the properties of a shape which will allow it to tessellate.</li> <li>• Identify similar shapes.</li> <li>• Identify diagonals in quadrilaterals and their properties.</li> <li>• <b>Find missing edges and angles in similar shapes.</b></li> <li>• <b>Prove two triangles are similar.</b></li> <li>• <b>Prove two triangles are congruent.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 7: Ratio</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Use of real-life problems to share amounts</li> <li>• Write a ratio from a given diagram.</li> <li>• Calculate with simple ratios.</li> <li>• Understand the importance of order of a ratio.</li> <li>• Write ratios to their simplest form.</li> <li>• Recognise equivalent ratios.</li> <li>• Share amounts into given ratios.</li> <li>• Use unitary ratios to compare amounts.</li> <li>• Best buys.</li> <li>• Solve problems involving recipes.</li> <li>• Use proportional reasoning</li> <li>• <b>Solve ratio problems given one of the shares or how much more one has than the other and NOT the total.</b></li> <li>• <b>Understand and use map scales.</b></li> <li>• <b>Introduce equations and graphs for direct and inverse proportions.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 8: Calculations, BIDMAS and Using a Calculator</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Add and subtract whole numbers.</li> <li>• Multiply and divide a whole number by a single digit whole number.</li> <li>• Use inverse operations to find missing numbers.</li> <li>• Recall and use multiplication facts for the multiplication tables up to 12 x 12.</li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>

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<ul style="list-style-type: none"> <li>• Use a calculator to complete the four operations with positive integers.</li> <li>• Develop strategies for mental addition and subtraction of integers.</li> <li>• Use written methods for multiplying and dividing integers.</li> <li>• Use written methods for adding and subtracting decimals.</li> <li>• Use BIDMAS with +, -, x, ÷ and brackets.</li> <li>• Use a calculator to add and subtract integers and decimals.</li> <li>• Use a calculator to complete the four operations with integers and decimals.</li> <li>• Investigate tests of divisibility.</li> <li>• Use BIDMAS in calculations containing indices.</li> <li>• Insert operations and brackets into a calculation to make it true</li> <li>• Know when to insert brackets into a calculation when inputting into a calculator.</li> <li>• Use the <sup>2</sup> and <sup>3</sup> buttons effectively.</li> <li>• Introduce and use the SD button.</li> <li>• Reset a calculator.</li> <li>• Correcting a mistake on a calculator.</li> <li>• Perform prime factor decomposition on a calculator.</li> <li>• <b>Use written methods for multiplying and dividing decimals.</b></li> <li>• <b>Use the fraction and root buttons accurately.</b></li> <li>• <b>Use the ANS button effectively.</b></li> <li>• <b>Input complex calculations to find solutions.</b></li> <li>• <b>Convert between fractions and decimals using a calculator.</b></li> <li>• <b>Investigate why a maths error may occur on a calculator.</b></li> </ul>	
<b>Unit 9: Substitution</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Find outputs for function machines and mappings given the input.</li> <li>• Find inputs for function machines and mappings given the output.</li> <li>• Find the function, given the input and output.</li> <li>• Substitute positive integers into worded expressions.</li> <li>• Substitute integers into algebraic expressions.</li> <li>• Substitute integers into simple formulae.</li> <li>• <b>Substitute decimals and fractions into expressions and formulae.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 10: Solving Equations and Inequalities</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Use function machines to represent and solve one step equations.</li> <li>• Use inequality symbols to compare numbers.</li> <li>• Solve one step equations.</li> <li>• Represent and interpret inequalities on a number line.</li> <li>• Solve two step equations.</li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>

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<ul style="list-style-type: none"> <li>• Solve equations with unknowns on both sides.</li> <li>• Construct and solve linear equations from a worded context.</li> <li>• Solve linear inequalities.</li> <li>• Rearrange simple formulae.</li> <li>• <b>Solve linear equations involving fractional and negative coefficients.</b></li> <li>• <b>Rearrange complex formulae.</b></li> <li>• <b>Solve simultaneous equations.</b></li> <li>• <b>Solve quadratic equations.</b></li> <li>• <b>Solve equations using graphs</b></li> <li>• <b>Solve equations involving algebraic fractions.</b></li> </ul>	
<b>Unit 11: Time</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Read the time to the nearest 5 minutes on an analogue clock and draw the hands on a clock to show these times.</li> <li>• Compare, measure and record units for time</li> <li>• Tell the time from an analogue and digital clock.</li> <li>• Tell the time using 12 and 24hour clock.</li> <li>• Convert between different units of time – seconds, minutes, hours, day, months, years.</li> <li>• Record and compare time including am/pm, minutes in an hour, duration of events.</li> <li>• Convert between the 12 and 24hour clock.</li> <li>• Read and use timetables.</li> <li>• <b>Solve problems with time.</b></li> <li>• <b>Speed, distance, time.</b></li> <li>• <b>Route planning – identifying the best route to take.</b></li> <li>• <b>Converting between a decimal time given in hours to hours and minutes and vice-versa.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 12: Estimation and Approximation</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Round numbers to the nearest power of ten and whole number.</li> <li>• Estimate the size of everyday objects, distances etc.</li> <li>• Round numbers to a given number of decimal places.</li> <li>• Estimate an answer before calculating.</li> <li>• Round to a given number of significant figures.</li> <li>• Make and justify estimates and approximations of calculations by rounding to suitable significant figures/decimal places.</li> <li>• Use estimates or approximations to check solutions.</li> <li>• Use estimations to find solutions to calculations (multiplying/dividing mentally).</li> <li>• <b>Find approximate solutions from a graph.</b></li> <li>• <b>Find the upper and lower bound of a rounded number.</b></li> <li>• <b>Find the error interval for a rounded number.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>

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<b>Unit 13: Measures and Scales</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Compare lengths, heights, weights and capacities of two objects.</li> <li>• Choose appropriate standard units of length, capacity and weight.</li> <li>• Estimate the size of everyday objects, distances etc.</li> <li>• Read, interpret and compare scales on a range of measuring instruments.</li> <li>• Interpret a reading that lies between two unnumbered divisions of a scale.</li> <li>• Convert one metric unit to another.</li> <li>• Convert between metric and imperial units.</li> <li>• Solve problems involving units of measure including comparison of two or more items.</li> <li>• Compare readings on different scales.</li> <li>• <b>Convert between area and volume measures.</b></li> <li>• <b>Interpret and explore combining measures into rates of change in everyday contexts.</b></li> <li>• <b>Use scales to convert measures.</b></li> <li>• <b>Understand and use map scales.</b></li> <li>• <b>Use compound measures.</b></li> <li>• <b>Distance time graphs.</b></li> <li>• <b>Velocity-time graphs.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>
<b>Unit 14: Fractions</b>	
<p><u>Key Skills/ Knowledge:</u></p> <ul style="list-style-type: none"> <li>• Recognise vocabulary of fractions.</li> <li>• Identify a fraction as being equal part of a whole one.</li> <li>• Find a fraction of an amount (unit fraction only).</li> <li>• Recognise unit fractions on a diagram.</li> <li>• Find a fraction of an amount.</li> <li>• Simplify fractions.</li> <li>• Recognise and find equivalent fractions.</li> <li>• Add and subtract fractions with the same denominator.</li> <li>• Convert between simple fractions and decimals (e.g. <math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>).</li> <li>• Recognise fractions with numerators <math>&gt;1</math> on a diagram.</li> <li>• Order fractions.</li> <li>• Convert between mixed numbers and improper fractions.</li> <li>• Calculating with fractions.</li> <li>• Convert between terminating fractions and decimals and <math>\frac{1}{3}</math>, <math>\frac{2}{3}</math>.</li> <li>• <b>Calculate reverse problems <math>\frac{5}{8}</math> of a number is 45.</b></li> <li>• <b>Convert between all fractions and decimals including recurring decimals.</b></li> <li>• <b>Calculating with mixed numbers.</b></li> <li>• <b>Simplifying and calculating with algebraic fractions.</b></li> </ul>	<p>End of unit assessment – this will be marked, and the pupils will receive feedback in their books.</p>



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