

## Year 10 Developing: Curriculum Implementation Plan

Mathematics – Year 10 Developing – Overview				
Knowledge and Skills – Students will be taught to...	Reading, Oracy, Literacy	Formative Assessment	Summative Assessment	Link to GCSE Content
Please see individual units below.	<ul style="list-style-type: none"> <li>• Reading worded questions to understand the context and decide how to approach a problem</li> <li>• Paired discussion of problems</li> <li>• Writing responses to worded questions such as “Explain why...”</li> <li>• Expanding vocabulary of key mathematical terms</li> <li>• Giving verbal responses in class question-and-answer</li> </ul>	<ul style="list-style-type: none"> <li>• Questioning in class</li> <li>• Self-assessment</li> <li>• Peer-assessment</li> <li>• Starter and homework questions</li> <li>• Mini-tests</li> <li>• Show of hands and other forms of whole-class feedback</li> <li>• Review of student work during lessons</li> <li>• Mini-whiteboards</li> </ul>	<p>Termly whole-class assessments. One paper based on work completed during the year to date, one paper GCSE questions.</p> <p>Full GCSE mock examination in the summer term, in preparation for Year 11.</p>	Please see individual units below.

Mathematics – Weekly Unit 10A – Integers and Decimals	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Multiply integers up to <math>ThHTU \times TU</math></li> <li>• Divide integers up to <math>ThHTU \div TU</math></li> <li>• Add &amp; subtract decimals with up to 3dp, including with different numbers of decimal places</li> <li>• Solve money problems</li> </ul>	<p>Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers</p> <p>Understand and use place value in decimals</p> <p>Add and subtract decimals, including negative decimals, without a calculator</p>
Mathematics – Weekly Unit 10B – Negative Numbers, Factors and Primes	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Add &amp; subtract directed numbers, including in context</li> <li>• Add &amp; subtract a negative number (e.g. <math>34 + -28</math>)</li> <li>• Find the HCF of two small numbers by listing all of their factors</li> <li>• Identify prime numbers between 0 and 50</li> </ul>	<p>Use non-calculator methods to calculate the sum, difference, product and quotient of positive and negative whole numbers, fractions, mixed numbers and decimals</p> <p>Understand and use the terms prime, factor (divisor), multiple, common factor (divisor), common multiple</p> <p>Identify prime numbers less than 20</p> <p>Find the HCF and LCM of two whole numbers by listing</p>
Mathematics – Weekly Unit 10C – Powers and Roots	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Understand and evaluate positive integer powers</li> <li>• Identify square and cube numbers</li> <li>• Evaluate negative indices</li> <li>• Find square and cube roots, with and without a calculator</li> <li>• Apply the index laws for multiplication and division to numerical and algebraic terms</li> </ul>	<p>Understand and use the terms square, cube, root</p> <p>Recognise simple powers of 2, 3, 4 and 5 e.g. <math>27=3^3</math></p> <p>Use positive integer indices e.g. to write <math>2 \times 2 \times 2 \times 2</math> as <math>2^4</math></p> <p>Calculate positive integer powers and square roots</p> <p>Calculate exact roots</p> <p>Calculate with square roots, and with integer indices</p> <p>Know and apply the index laws for multiplication and division</p>
Mathematics – Weekly Unit 10D – Place Value and Ordering	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Understand place value in integers up to 10 million, and decimals with up to 3dp</li> <li>• Multiply and divide integers and decimals by 10, 100 and 1000</li> <li>• Order decimals with up to 3dp</li> <li>• Use the symbols <math>=, \neq, &lt;, &gt;, \geq, \leq</math></li> </ul>	<p>Use <math>&lt;, &gt;, \leq, \geq, =, \neq</math></p> <p>Understand and use place value in integers</p> <p>Understand and use place value in decimals</p>

Mathematics – Weekly Unit 10E – Fractions 1	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Simplify fractions</li> <li>• Equivalent fractions</li> <li>• Convert mixed numbers to improper fractions</li> <li>• Multiply &amp; divide with fractions and mixed numbers</li> </ul>	<p>Recognise and use equivalence between simple fractions and mixed numbers</p> <p>Multiply and divide simple fractions (proper and improper), including mixed numbers and negative fractions</p>
Mathematics – Weekly Unit 10F – Algebra 101	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Multiply &amp; divide algebraic terms</li> <li>• Expand a single bracket</li> <li>• Apply the index laws for power 0 and brackets</li> </ul>	<p>Simplify algebraic products and quotients</p> <p>Simplify expressions involving sums, products and powers, including the laws of indices</p> <p>Simplify algebraic expressions by multiplying a single term over a bracket</p>
Mathematics – Weekly Unit 10G – Fractions 2	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Find fractions of integer amounts, and fractions of fractions, including GCSE-standard questions in context</li> <li>• Order fractions using a common denominator</li> <li>• Convert improper fractions to mixed numbers</li> <li>• Add and subtract fractions with different denominators</li> </ul>	<p>Calculate a fraction of a quantity</p> <p>Add and subtract simple fractions (proper and improper)</p> <p>Calculate exactly with fractions</p>
Mathematics – Weekly Unit 10H – Algebra 102	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Collect like terms</li> <li>• Substitute positive and negative numbers into expressions</li> </ul>	<p>Simplify algebraic expressions by collecting like terms</p> <p>Substitute positive numbers into simple expressions</p>
Mathematics – Weekly Unit 10I – Multiples, Primes and Rounding	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Find the LCM of two numbers by listing multiples</li> <li>• Prime factorisation, including using indices</li> <li>• Round to the nearest 10, 100, 1000</li> </ul>	<p>Understand and use the terms prime, factor (divisor), multiple, common factor (divisor), common multiple</p> <p>Find the HCF and LCM of two whole numbers by listing</p> <p>Identify prime numbers less than 20</p> <p>Express a whole number as a product of its prime factors e.g. <math>24 = 2 \times 2 \times 2 \times 3</math></p>

	<p>Understand that each number can be expressed as a product of prime factors in only one way</p> <p>Round numbers to the nearest whole number, ten, hundred, etc.</p>
<b>Mathematics – Weekly Unit 10J – Equations</b>	
<b>Knowledge and Skills – Students will be taught to...</b>	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Solve a range of 1-step and 2-step linear equations, including with negative and non-integer solutions, extending to contexts such as perimeter or angles</li> <li>• Solve equations with the unknown on both sides</li> <li>• Solve equations with brackets</li> </ul>	<p><a href="#">Solve linear equations in one unknown algebraically</a></p> <p><a href="#">Set up and solve linear equations in mathematical and non-mathematical contexts, including those with the unknown on both sides of the equation</a></p> <p><a href="#">Interpret solutions to equations in context</a></p>
<b>Mathematics – Weekly Unit 10K – Solids</b>	
<b>Knowledge and Skills – Students will be taught to...</b>	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Identify the faces, edges, vertices and curved surfaces of 3D solids</li> <li>• Draw a plan or elevation of a given solid on a centimetre square grid</li> <li>• Identify a solid from its plan and elevations</li> </ul>	<p><a href="#">Use the terms vertices, edges, planes</a></p> <p><a href="#">Recognise the terms face, surface, edge, and vertex</a></p> <p><a href="#">Recognise and know the properties of the cube, cuboid, prism, cylinder, pyramid, cone and sphere</a></p> <p><a href="#">Interpret plans and elevations of simple 3D solids</a></p> <p><a href="#">Construct plans and elevations of simple 3D solids</a></p>
<b>Mathematics – Weekly Unit 10L – Non-calculator Percentage</b>	
<b>Knowledge and Skills – Students will be taught to...</b>	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Calculate percentages (non-calculator)</li> <li>• Find the result of a percentage change (non-calculator)</li> </ul>	<p><a href="#">Understand percentage is ‘number of parts per hundred’</a></p> <p><a href="#">Calculate a percentage of a quantity</a></p> <p><a href="#">Increase or decrease a quantity by a simple percentage</a></p>
<b>Mathematics – Weekly Unit 10M – Estimation and Mixed Numbers</b>	
<b>Knowledge and Skills – Students will be taught to...</b>	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Round integers and decimals to 1sf</li> <li>• Estimate the result of a calculation involving up to 3 values</li> <li>• Add and subtract with mixed numbers, including in context</li> </ul>	<p><a href="#">Round numbers to a given number of significant figures</a></p> <p><a href="#">Estimate or check, without a calculator, the result of a calculation by using suitable approximations</a></p> <p><a href="#">Add and subtract simple fractions (proper and improper), including mixed numbers</a></p>

Mathematics – Weekly Unit 10N – Probability 1	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Work with the 0-1 probability scale</li> <li>• Relate this to word descriptions of likelihood</li> <li>• Identify theoretical probabilities in a range of contexts</li> <li>• Complete frequency trees for given information, and use them to identify theoretical probabilities</li> <li>• List all the outcomes for a simple situation (choices from a menu etc.) and use this to identify probabilities</li> </ul>	<p>Use the 0-1 probability scale as a measure of likelihood of random events, e.g. ‘impossible’ with 0, ‘evens’ with 0.5, ‘certain’ with 1</p> <p>Use systematic listing strategies</p> <p><u>Use tree diagrams to enumerate sets and to record the probabilities of successive events (tree frames may be given and in some cases will be partly completed)</u></p> <p><u>Use tree diagrams and other representations to calculate the probability of independent and dependent combined events</u></p>
Mathematics – Weekly Unit 10O – Averages and Range	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Identify the mean, median and mode for simple data, understanding the concept of these as averages, extending to problems where a missing value has to be found to satisfy given values of statistics</li> <li>• Identify the range for simple data, understanding this as a measure of spread</li> <li>• Identify the mode and range, and calculate the mean, from a table of ungrouped data</li> </ul>	<p>Calculate the mean, median and range for ungrouped data</p> <p>Identify the mode for ungrouped data</p> <p>Find the modal class, and calculate estimates of the mean for grouped data, and understand why they are estimates</p> <p>Make simple comparisons</p> <p>Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (including modal class) and spread (the range)</p>
Mathematics – Weekly Unit 10P – Converting Units	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Convert between common metric units of length, mass and capacity, knowing the conversions</li> <li>• Convert between metric and imperial units, or between currencies, given the conversion</li> <li>• Use a conversion graph to convert units</li> </ul>	<p>Solve simple problems involving quantities in direct proportion, including currency conversion problems</p> <p>Use standard units of measurement for length, area, capacity, mass and money</p> <p>Convert standard units of measurement for time and capacity</p> <p>Construct and interpret graphs in real-world contexts e.g. distance-time, money conversion, temperature conversion</p>

Mathematics – Weekly Unit 10Q – Perimeter and Circumference	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>Identify the perimeter of simple shapes</li> <li>Find the perimeter of compound shapes made from rectangles (rectilinear)</li> <li>Find the circumference of a circle</li> <li>Find the perimeter of a semi-circles etc.</li> </ul>	<p>Calculate the perimeter of rectilinear shapes</p> <p>Recall and use formulae for the circumference and area of a circle</p> <p>Apply perimeter formulae in calculations involving the perimeter of composite 2D shapes</p> <p>Calculate exactly with multiples of <math>\pi</math></p>
Mathematics – Weekly Unit 10R – Angles Basics	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>Identify different types of angle</li> <li>Measure/draw acute and obtuse angles using a protractor</li> <li>Calculate missing angles using the rules for angles at a point, on a straight line, vertically opposite angles</li> <li>Calculate missing angles in triangles &amp; quadrilaterals, including isosceles triangles</li> </ul>	<p>Know the terms acute, obtuse, right and reflex angles</p> <p>Use a protractor to construct and measure angles</p> <p>Know and use the sum of the angles at a point is <math>360^\circ</math></p> <p>Know that the sum of the angles at a point on a line is <math>180^\circ</math></p> <p>Know and use vertically opposite angles are equal</p> <p>Derive and use the sum of the interior angles of a triangle is <math>180^\circ</math></p>
Mathematics – Weekly Unit 10S – Sequences and Brackets	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>Expand combinations of single brackets, simplifying the result</li> <li>Identify the next term of a range of sequences, explain the reasoning, and make deductions about later terms, including Fibonacci-style sequences</li> <li>Draw the next pattern in a sequence and make deductions about later patterns</li> </ul>	<p>Simplify algebraic expressions by multiplying a single term over a bracket</p> <p>Generate a sequence by spotting a pattern or using a term-to-term rule given algebraically or in words</p> <p>Recognise sequences of triangular and square numbers, and simple arithmetic progressions</p> <p>Recognise and use the sequences of triangular and square numbers, and simple arithmetic progressions</p> <p>Recognise the sequence of cube numbers</p>

Mathematics – Weekly Unit 10T – Fractions 3 and Decimals	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Increase or decrease a quantity by a fraction</li> <li>• Multiply decimals</li> <li>• Round to decimal places</li> </ul>	<p><b>Calculate exactly with fractions</b></p> <p>Multiply and divide simple fractions (proper and improper), including mixed numbers and negative fractions</p> <p><u>Calculate with fractions greater than 1</u></p> <p>Understand and use place value in decimals</p> <p>Multiply decimals without a calculator</p>
Mathematics – Weekly Unit 10U – Charts and Diagrams	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Interpret and complete bar charts and pictograms</li> <li>• Recognise when a bar chart is misleading</li> <li>• Construct a pie chart by calculating angles</li> </ul>	<p>Interpret and construct charts appropriate to the data type; including frequency tables, bar charts, pie charts and pictograms for categorical data, vertical line charts for ungrouped discrete numerical data</p> <p>Recognise graphical misrepresentation through incorrect scales, labels, etc.</p>
Mathematics – Weekly Unit 10V – Volume and Parallel Lines	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Calculate the volume of cubes and cuboids, extending to problems involving density</li> <li>• Calculate the volume of triangular prisms</li> <li>• Find missing angles near parallel lines</li> </ul>	<p>Know and apply the formulae <math>A=1/2bh</math> for the area of a triangle and <math>A=bh</math> for the area of a rectangle</p> <p>Know and use alternate angles or corresponding angles on parallel lines are equal</p>
Mathematics – Weekly Unit 10W – Calculator Percentage	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Find percentages using a calculator</li> <li>• Find the result of a percentage change using a calculator</li> <li>• Identify a percentage in a given situation and convert a fraction to a percentage using a calculator</li> </ul>	<p>Understand percentage is ‘number of parts per hundred’</p> <p>Calculate a percentage of a quantity</p> <p>Express one quantity as a percentage of another, with or without a calculator</p> <p>Increase or decrease a quantity by a simple percentage</p>

Mathematics – Weekly Unit 10X – Probability 2 and Comparing Data	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Compare data using the range and the mean/median</li> <li>• Complete a sample space diagram and use it to identify simple probabilities</li> </ul>	<p><u>Make simple comparisons</u></p> <p><u>Compare data sets using ‘like for like’ summary values</u></p> <p><b>Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through appropriate measures of central tendency (including modal class) and spread (the range)</b></p> <p><b>Apply statistics to describe a population</b></p> <p><u>Calculate probabilities of simple combined events, for example rolling two dice and looking at the totals</u></p> <p><u>Use tables and grids to list the outcomes of single events and simple combinations of events, and to calculate theoretical probabilities e.g. Flipping two coins, finding the number of orders in which the letters E, F and G can be written</u></p> <p><u>Use sample spaces for more complex combinations of events e.g. outcomes for sum of two dice</u></p>
Mathematics – Weekly Unit 10Y – Transformations	
Knowledge and Skills – Students will be taught to...	Links to KS4 National Curriculum (red) & Exam board specification (blue)
<ul style="list-style-type: none"> <li>• Reflect a shape in a vertical or horizontal mirror line on co-ordinate axes</li> <li>• Reflect a simple shape in a 45° diagonal line on a grid</li> <li>• Rotate a simple shape through 90° or 180° about a given co-ordinate point</li> <li>• Translate a shape using a vector, extending to identifying or drawing column vectors on grids</li> <li>• Enlarge a shape using a positive integer or fraction scale factor</li> </ul>	<p><u>Use x- and y-coordinates in plane geometry problems, including transformations of simple shapes</u></p> <p><u>Reflect a simple shape in a given mirror line</u></p> <p><u>Identify the mirror line of a reflection from a shape and its image</u></p> <p><u>Perform a specified translation using a column vector</u></p> <p><u>Identify a mirror line <math>x=a</math>, <math>y=b</math>, <math>y=x</math> or <math>y=-x</math> from a simple shape and its image under reflection</u></p> <p><u>Identify the centre, angle and direction of a rotation from a simple shape and its image under rotation</u></p> <p><b>Describe translations as 2D vectors</b></p>