

Key Stage 4 Overview: Mathematics Year 10

	Module 1	Module 2	Module 3	Module 4	Module 5	Module 6
Year 10	<p>University Challenge:</p> <p>Context:</p> <p>“Applying algebraic techniques.”</p> <p>Skills:</p> <p>Using the trial and improvement method, simplifying algebraic fractions, using algebraic power rules to solve problems and understanding reoccurring decimals. Extended algebra: solving area, perimeter and angle problems through algebra and using algebra in context.</p> <p>To solve $y=ax^2+bx+c$ and to plot the graph for quadratic equations.</p> <p>To Solve simultaneous equations (linear and quadratics) through a variety of methods.</p> <p>To solve quadratic equations by completing the square.</p> <p>To Understand the application of discriminant b^2-4ac and to use $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$ to find the solutions to quadratic equations.</p>	<p>University Challenge:</p> <p>Context:</p> <p>“Putting things in proportion.”</p> <p>Skills:</p> <p>Use ratio notation to divide quantities, reduce ratios to simplest form, and solve direct and inverse proportional reasoning problems.</p> <p>Apply proportional reasoning techniques (such as the red arrows) to a variety of contexts to produce prescribed outcomes, e.g. finding which retail deal represents the best value for money.</p> <p>Use the 0-1 probability scale to assess the likelihood of events and outcomes, quantify these using fractions, decimals and percentages, construct tree diagrams, Venn diagrams and possibility spaces to calculate conditional and combined probabilities, and discover experimental probabilities through testing.</p>	<p>University Challenge:</p> <p>Context:</p> <p>“Financing your plans.”</p> <p>Skills:</p> <p>Calculating with and converting standard form numbers, normal numbers, primes, factors and multiples, and powers and roots.</p> <p>Estimating appropriately by using decimal places and significant figures applied to a context and calculating upper and lower bounds.</p> <p>To simplify and rationalise surds.</p> <p>To calculate the percentage of amounts; percentage increase and decrease.</p>	<p>University Challenge:</p> <p>Context:</p> <p>“What’s your angle on it?”</p> <p>Skills:</p> <p>Recalling, applying and calculating with angle rules relating to triangles & special triangles, quadrilaterals and parallel lines.</p> <p>Apply a variety of angle theorems relating to circles and cyclic shapes, giving staged reasoning (kite theorem, cyclic quadrilaterals, cyclic delta, alternate segment,</p>	<p>University Challenge:</p> <p>Context:</p> <p>“Getting a shape-up.”</p> <p>Skills:</p> <p>Use vectors to describe translations and combine vectors by adding and subtracting both in vector form and using diagrams.</p> <p>Extended learning: To Solve the more complex angle problems by using a combination of all above facts, algebra and Pythagorean theorem.</p>	<p>University Challenge:</p> <p>Context:</p> <p>“In summary...”</p> <p>Skills:</p> <p>Using the concepts of faces, edges & vertices, volume, planes and plans & elevations to evaluate a range of 3D shapes (cuboids, prisms, pyramids, cones, spheres and compound shapes).</p>