

## DETAILED PROPOSED SCHEDULE

Term 1: Algebraic Methods and Graphing	
<b>L1: Fundamentals of Algebra 1:</b> Expansion and Factorisation	<ul style="list-style-type: none"> <li><input type="checkbox"/> Expansion</li> <li><input type="checkbox"/> Factorisation</li> <li><input type="checkbox"/> Difference of two squares</li> <li><input type="checkbox"/> Perfect squares</li> <li><input type="checkbox"/> Sum and difference of cubes</li> <li><input type="checkbox"/> Algebraic fractions</li> </ul>
<b>L2: Fundamentals of Algebra 2:</b> Quadratics, Surds and Indices	<ul style="list-style-type: none"> <li><input type="checkbox"/> Solving quadratics</li> <li><input type="checkbox"/> Equations reducible to quadratics</li> <li><input type="checkbox"/> Using simultaneous equations</li> <li><input type="checkbox"/> Surds</li> <li><input type="checkbox"/> Index laws</li> </ul>
<b>L3: Coordinate Geometry 1:</b> Fundamentals	<ul style="list-style-type: none"> <li><input type="checkbox"/> Distance, midpoint and gradient</li> <li><input type="checkbox"/> <math>y = mx + b</math>, <math>Ax + By + C = 0</math></li> <li><input type="checkbox"/> Parallel and perpendicular lines</li> <li><input type="checkbox"/> x- and y-intercepts</li> <li><input type="checkbox"/> Points of intersection</li> </ul>
<b>L4: Coordinate Geometry 2:</b> Advanced Methods	<ul style="list-style-type: none"> <li><input type="checkbox"/> Perpendicular distance</li> <li><input type="checkbox"/> Divide line into given ratio</li> <li><input type="checkbox"/> Proof of concurrence of medians in particular triangles</li> <li><input type="checkbox"/> Simultaneous equations</li> <li><input type="checkbox"/> Longer, multi-step problems</li> </ul>
<b>L5: Variation and the Inverse</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Direct variation</li> <li><input type="checkbox"/> Inverse variation</li> <li><input type="checkbox"/> Graphing direct and inverse variations</li> <li><input type="checkbox"/> Variation with powers, including inverse</li> <li><input type="checkbox"/> Predictions based on rules</li> </ul>
<b>L6: Introduction to Graphing 1:</b> Quadratics and Inequalities	<ul style="list-style-type: none"> <li><input type="checkbox"/> Inequalities, sketch regions</li> <li><input type="checkbox"/> Parabolas</li> <li><input type="checkbox"/> Polynomials (incl. cubics and quartics)</li> </ul>
<b>L7: Introduction to Graphing 2:</b> Circles and Hyperbolas	<ul style="list-style-type: none"> <li><input type="checkbox"/> Circles and semi-circles</li> <li><input type="checkbox"/> Vertical and horizontal asymptotes</li> <li><input type="checkbox"/> Hyperbolas</li> <li><input type="checkbox"/> Domain and range</li> </ul>

Term 2: Geometry and Trigonometry	
<b>L1: Geometry 1:</b> Surface Area, Volume and Angle Properties, Congruence	<input type="checkbox"/> Revision of surface area and volume <input type="checkbox"/> Setting out and standards of proof <input type="checkbox"/> Revision of angle properties in parallel lines, straight lines, triangles and quadrilaterals <input type="checkbox"/> Congruent triangles <input type="checkbox"/> Problems and proofs
<b>L2: Geometry 2:</b> Similar Triangles, Quadrilaterals and Harder Problems	<input type="checkbox"/> Sufficiency conditions for similar triangles <input type="checkbox"/> Similar triangles <input type="checkbox"/> Problems and proofs <input type="checkbox"/> Sufficiency conditions for quadrilaterals <input type="checkbox"/> Harder proofs and numerical exercises
<b>L3: Introduction to Circle Geometry</b>	<input type="checkbox"/> Chord properties <input type="checkbox"/> Angle properties <input type="checkbox"/> Products of intercepts of intersecting chords are equal
<b>L4: Using Radians</b>	<input type="checkbox"/> Definition of radians <input type="checkbox"/> Exact values of trig ratios expressed in radians <input type="checkbox"/> Arc length <input type="checkbox"/> Area of a sector <input type="checkbox"/> Area of a segment <input type="checkbox"/> Solve problems, express answer in radians
<b>L5: Trigonometry 1:</b> Sine and Cosine Rules	<input type="checkbox"/> Exact values for trigonometric ratios with $30^\circ$ , $45^\circ$ , $60^\circ$ <input type="checkbox"/> Solve problems using trigonometric ratios <input type="checkbox"/> Sine rule - derivation and problems <input type="checkbox"/> Cosine rule - derivation and problems
<b>L6: Trigonometry 2:</b> Area of a Triangle and Three Dimensional Trigonometry	<input type="checkbox"/> Area of a triangle $A = 0.5absinC$ <input type="checkbox"/> Problems incl. bearings, angles of elevation/depression <input type="checkbox"/> Two triangles with a common side <input type="checkbox"/> Overlapping triangles <input type="checkbox"/> Three dimensional trigonometry
<b>L7: Introduction to Trigonometric Functions</b>	<input type="checkbox"/> Unit circle - redefine trigonometric functions <input type="checkbox"/> Evaluate values $>90^\circ$ using the unit circle <input type="checkbox"/> Graph trigonometric functions <input type="checkbox"/> State amplitude, period, domain, range <input type="checkbox"/> cot, sec, cosec <input type="checkbox"/> Derive Pythagorean relationships from the unit circle <input type="checkbox"/> Trigonometric identities

<b>Term 3: Advanced Algebraic Methods and Graphing</b>	
<b>L1: Logs and Exponentials 1: Log Laws</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Define a logarithm</li> <li><input type="checkbox"/> Solve simple logarithmic equations</li> <li><input type="checkbox"/> Log laws</li> <li><input type="checkbox"/> Use log laws to simplify logarithmic expressions</li> <li><input type="checkbox"/> Evaluating logarithmic expressions</li> </ul>
<b>L2: Logs and Exponentials 2: Graphing Logs and Exponentials</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Graph logarithms</li> <li><input type="checkbox"/> Define exponentials, etc</li> <li><input type="checkbox"/> Graph exponentials</li> <li><input type="checkbox"/> Identify geometric relationship between graphs</li> <li><input type="checkbox"/> Harder problems</li> </ul>
<b>L3: Advanced Graphing 1: Oblique Asymptotes and Translation</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Revision of earlier content (logs, exp, trig)</li> <li><input type="checkbox"/> Oblique asymptotes</li> <li><input type="checkbox"/> Translation (addition and subtraction of constant)</li> </ul>
<b>L4: Advanced Graphing 2: Advanced Techniques</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Addition and subtraction of functions</li> <li><input type="checkbox"/> Multiplication of functions</li> <li><input type="checkbox"/> Division of functions</li> <li><input type="checkbox"/> Domain and range</li> </ul>
<b>L5: Statistical Methods: Representing and Analysing Data</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Frequency distribution tables</li> <li><input type="checkbox"/> Histograms</li> <li><input type="checkbox"/> Stem-and-leaf plots</li> <li><input type="checkbox"/> Dot plots</li> <li><input type="checkbox"/> Skew, symmetry, bimodality</li> <li><input type="checkbox"/> Quartiles, interquartile range</li> <li><input type="checkbox"/> Standard deviation</li> <li><input type="checkbox"/> Box plots</li> <li><input type="checkbox"/> Bivariate data analysis</li> <li><input type="checkbox"/> Scatter plots and lines of best fit</li> </ul>
<b>L6: Financial Mathematics: Simple and Compound Interest</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Calculate GST based on GST-inclusive price</li> <li><input type="checkbox"/> Calculate best buy by comparing price per unit</li> <li><input type="checkbox"/> Discounting</li> <li><input type="checkbox"/> Wages, loading, salaries, tax, tax deductions</li> <li><input type="checkbox"/> Simple interest</li> <li><input type="checkbox"/> Compound interest</li> </ul>
<b>L7: Probability</b>	<ul style="list-style-type: none"> <li><input type="checkbox"/> Terminology</li> <li><input type="checkbox"/> Solve problems by identifying sample space</li> <li><input type="checkbox"/> Dot diagrams for two outcomes</li> <li><input type="checkbox"/> Tree diagrams for three or more outcomes</li> <li><input type="checkbox"/> Venn diagrams</li> <li><input type="checkbox"/> Conditional probability</li> <li><input type="checkbox"/> Product and addition rules</li> <li><input type="checkbox"/> Dependent and independent events</li> <li><input type="checkbox"/> Complementary events</li> </ul>

Term 4: Miscellaneous Topics	
<b>L1: Polynomials 1:</b> Quadratics	<input type="checkbox"/> Solve quadratic equations <input type="checkbox"/> Equations reducible to quadratics <input type="checkbox"/> Quadratic inequalities, including graphs <input type="checkbox"/> The discriminant <input type="checkbox"/> Positive and negative definite expressions
<b>L2: Polynomials 2:</b> Roots of Quadratic and Cubic Equations	<input type="checkbox"/> Construct a quadratic equation given its roots <input type="checkbox"/> Find the relationships between roots and coefficients of a quadratic equation <input type="checkbox"/> Find the relationships between roots and coefficients of a cubic equation
<b>L3: Absolute Values</b>	<input type="checkbox"/> Definition of absolute value <input type="checkbox"/> Sketch linear functions with absolute values <input type="checkbox"/> Solve equations with absolute values <input type="checkbox"/> Solve inequalities with absolute value <input type="checkbox"/> Sketch non-linear graphs with absolute values - quadratics, trigonometric, and hyperbolas
<b>L4: Sequences and Series 1:</b> Arithmetic Progressions	<input type="checkbox"/> Arithmetic sequences <input type="checkbox"/> Arithmetic series <input type="checkbox"/> Harder problems
<b>L5: Sequences and Series 2:</b> Geometric Progressions and the Limiting Sum	<input type="checkbox"/> Geometric sequences <input type="checkbox"/> Geometric series <input type="checkbox"/> Limiting sum <input type="checkbox"/> Harder problems
<b>L6: Vectors and Matrices 1:</b>	<input type="checkbox"/> Something
<b>L7: Vectors and Matrices 2:</b>	<input type="checkbox"/> Something else