| Year 12 | T1 | T2 | T3 | T4 | T5 | T6 |
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| Content / <br> Topic for Term | Indices and surds <br> Polynomials and algebra <br> Coordinate geometry 1 <br> (linear functions) <br> Calculus 1 <br> (differentiation) <br> STATISTICS (see <br> separate curriculum <br> map) | Binomial expansion Coordinate geometry 2 (graphs) Calculus 2 (differentiation) Logarithms 1 STATISTICS (see separate curriculum map) | Coordinate geometry 3 (circles) <br> Trigonometry <br> Calculus 3 <br> (Integration) <br> STATISTICS (see <br> separate curriculum map) | Logarithms 2 <br> Proof <br> Vectors <br> MECHANICS (see <br> separate <br> curriculum map) | Indices and Surds <br> Polynomials and algebra <br> Coordinate geometry <br> 1 (linear functions) <br> Calculus 1 <br> (differentiation) <br> STATISTICS (see <br> separate curriculum <br> map) | Binomial expansion Coordinate geometry 2 (graphs) Calculus 2 (differentiation) Logarithms 1 STATISTICS (see separate curriculum map) |
| Key <br> knowledge for acquisition, recall and application in assessment or exam | - Simplifying and manipulating surds <br> - Applying the rules of indices to solve exponential equations <br> - Expanding brackets/factorising <br> - Solving linear, quadratic, and simultaneous equations <br> - Completing the square <br> - Use of discriminant | - Use of factorials <br> - Binomial expansion formula and its applications <br> - Recognise and sketch quadratic, cubic, quartic and reciprocal graphs <br> - Transform graphs <br> - Work out points of intersection between graphs and the $x$ - $y$ axes <br> - Differentiate polynomials | - General equation of a circle <br> - Finding centre, radius, and diameter of a circle <br> - Application of Pythagoras and SOHCAHTOA to right-angled triangles within a circle <br> - Equations of tangents to circles | - Natural logarithms <br> - Use linear models to estimate parameters of log functions <br> - Solve exponential growth and decay problems <br> - Know when to use proof by deduction, exhaustion and | - Simplifying and manipulating surds <br> - Applying the rules of indices to solve exponential equations <br> - Expanding brackets/factorising <br> - Solving linear, quadratic, and simultaneous equations <br> - Completing the square <br> - Use of discriminant | - Use of factorials <br> - Binomial expansion formula and its applications <br> - Recognise and sketch quadratic, cubic, quartic and reciprocal graphs <br> - Transform graphs <br> - Work out points of intersection between graphs and the $x$ - $y$ axes |


|  | - Application of Iong division to algebraic division <br> - Use of factor and remainder theorem <br> - Know and use both formulae for equations of a line <br> - Equations for midpoint and gradient <br> - Equations of parallel and perpendicular lines <br> - $1^{\text {st }}$ principles formula <br> - Understand that differentiating determines the gradient of a curve at any point | - Use calculus to work out stationary points <br> - Work out equations of tangents and normals <br> - Understand and articulate the link between logarithms and indices <br> - Know and apply the three laws of logs to simplify or evaluate logarithms | - Circle theorems from GCSE and their applications <br> - Sine and cosine rule and area of triangle formulae and their applications <br> - Recognising and transforming graphs of trig functions <br> - CAST diagram <br> - Solving trig equations <br> - Two trig identities <br> - Know that integration is the inverse of differentiation <br> - Work out definite and indefinite integrals <br> - Calculate the area under a curve by integration | counterexample <br> - Use Pythagoras to calculate magnitude of a vector <br> - Use trigonometry to calculate direction of a vector <br> - Identify parallel and colinear vectors <br> - Work out relative displacement of two vectors and be able to show this using a diagram | - Application of long division to algebraic division <br> - Use of factor and remainder theorem <br> - Know and use both formulae for equations of a line <br> - Equations for midpoint and gradient <br> - Equations of parallel and perpendicular lines <br> - ${ }^{\text {st }}$ principles formula <br> - Understand that differentiating determines the gradient of a curve at any point | - Differentiate polynomials <br> - Use calculus to work out stationary points <br> - Work out equations of tangents and normals <br> - Understand and articulate the link between logarithms and indices <br> - Know and apply the three laws of logs to simplify or evaluate logarithms |
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| Key skills to apply in assessment or exam | - Indices and surds <br> - Polynomials and algebra | - Binomial expansion | - Coordinate geometry 3 (circles) <br> - Trigonometry | - Logarithms 2 <br> - Proof <br> - Vectors | - Indices and surds <br> - Polynomials and algebra | - Binomial expansion |



