

Term 1

PROPOSED TIME	TOPIC	SECTIONS
WEEKS 1-2	Proofs Reasoning and Logic	Number Theory (Recap) Axioms Binary Operations Direct Proof Proof by Counter-example/Exhaustion/ (*Contradiction). Principle of Mathematical Induction Truth Tables Compound Propositions Converse, Inverse and Contrapositive of Statements Logical Equivalence Identities of Propositions
WEEK 3	Algebraic Operations	Remainder and Factor Theorem Factors of $a^n - b^n$ for $n \leq 6$ Polynomial Identities
WEEK 4	Exponential and Logarithmic Functions	Graphs and properties of both functions Laws of Indices/Surds and Laws of Logs (including change of base) Natural Logs
WEEK 5-6	Functions	Definition of a Function. Ordered Pairs. Injective, Surjective, Bijective, Inverse (include graphical interpretation), Even and Odd Functions The Modulus Function Inequalities (Rational and Modulus) Cubic Functions and Equations
WEEK 7-9	Trigonometry	Trig functions, Identities and Trig Equations (General Solution included)
WEEK 9-10	Geometry	Coordinate Geometry (include Parabola and Ellipse) Cartesian and Parametric Form. Loci of Points given certain properties.

*Not explicitly stated in syllabus but has been tested in recent examinations.

Term 2

WEEKS 1-3	Vectors	Expression of Vectors Vector Algebra Scalar(Dot) Product Vector Equation of a Line Equation of a Plane
WEEKS 4-5	Limits	Concept of a Limit Limit Theorems Continuity and Discontinuity
WEEKS 6-8	Differentiation	The Gradient Derivative as a Limit Rates of Change Differentiation from First Principles Differentiation of simple functions, quotients, products Stationary Points, Chain Rule, Parametric equations Second Derivatives Curve Sketching Tangents and Normals to Curves
WEEKS 9-10	Integration	Integration as reverse differentiation Definite and Indefinite Integrals Application of Integration (Area, Volume and Solutions to basic Differential Equations) Integration of Polynomials and Trig Functions Use of $\int_a^b f(x)dx = F(b) - F(a)$, where $F'(x) = f(x)$ Simple first and second order differential equations.