SUBJECT CONTENT

Knowledge of the content of O-Level Mathematics syllabus is assumed in the syllabus below and will not be tested directly, but it may be required indirectly in response to questions on other topics.

Topic/Sub-topics		Content
ALGEBRA		
A1	Equations and inequalities	Conditions for a quadratic equation to have: (i) two real roots (ii) two equal roots (iii) no real roots and related conditions for a given line to: (i) intersect a given curve (ii) be a tangent to a given curve (iii) not intersect a given curve Conditions for ax² + bx + c to be always positive (or always negative) Solving simultaneous equations in two variables with at least one linear equation, by substitution Relationships between the roots and coefficients of a quadratic equation Solving quadratic inequalities, and representing the solution on the number line
A2	Indices and surds	Four operations on indices and surds, including rationalising the denominator Solving equations involving indices and surds
АЗ	Polynomials and Partial Fractions	 Multiplication and division of polynomials Use of remainder and factor theorems Factorisation of polynomials Use of: a² + b² = (a + b)(a² - ab + b²) a² - b³ = (a - b)(a² + ab + b²) Solving cubic equations Partial fractions with cases where the denominator is no more complicated than: (ax + b)(cx + a²) (ax + b)(cx + a²²) (ax + b)(x² + c²²)
A4	Binomial expansions	 Use of the Binomial Theorem for positive integer n Use of the notations n! and (n/r) Use of the general term (n/r)a^{n-r}b^r, 0 < r ≤ n (knowledge of the greatest term and properties of the coefficients is not required)

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Marco Cascella

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