IGCSE Additonal Maths Cambridge (0606)

	Topic		
Year 10	1. Functions	1.1	Understand the terms: function, domain, range (image set), one–one function, many–one function, inverse function and composition of functions.
		1.2	Find the domain and range of functions, including inverse and composite functions.
		1.3	Recognise and use function notation.
		1.4	Understand the relationship between y = f(x) and y = |f(x)| for linear, quadratic, cubic, or trigonometric functions.
		1.5	Explain why a given function does not have an inverse.
		1.6	Find the inverse of a one–one function.
		1.7	Form and use composite functions.
		1.8	Use sketch graphs to show the relationship between a function and its inverse.
	2. Quadratic Functions	2.1	Find the maximum or minimum value of a quadratic function by completing the square or differentiation.
		2.2	Use the maximum or minimum value of a quadratic function to sketch the graph or determine its range for a given domain.
		2.3	Know the conditions for quadratic equations to have two real roots, two equal roots, or no real roots, and related conditions for lines and curves.
		2.4	Solve quadratic equations for real roots using factorization, the quadratic formula, or completing the square.
		2.5	Find the solution set for quadratic inequalities graphically or algebraically.
Year 11 Term 1	3. Factors of Polynomials	3.1	Know and use the remainder and factor theorems.
		3.2	Find factors of polynomials, including cubic polynomials.
		3.3	Solve cubic equations.
	4. Equations, Inequalities, and Graphs	4.1	Solve equations involving modulus functions.
		4.2	Solve graphically or algebraically inequalities involving modulus functions.
		4.3	Use substitution to form and solve a quadratic equation.
		4.4	Sketch the graphs of cubic polynomials and their moduli.
		4.5	Solve graphically cubic inequalities.
	5. Simultaneous Equations	5.1	Solve simultaneous equations in two unknowns by elimination or substitution.
	6. Logarithmic and Exponential Functions	6.1	Know and use simple properties and graphs of logarithmic and exponential functions.
		6.2	Know and use the laws of logarithms, including change of base.
		6.3	Solve equations of the form a^x= b.
	7. Straight-Line Graphs	7.1	Use the equation of a straight line.
		7.2	Know and use the condition for two lines to be parallel or perpendicular.
		7.3	Solve problems involving midpoint and length of a line.
		7.4	Transform given relationships to and from straight-line form.
	8. Coordinate Geometry of the Circle	8.1	Know and use the equation of a circle with radius r and centre (a, b).
		8.2	Solve problems involving the intersection of a circle and a straight line.
		8.3	Solve problems involving tangents to a circle.
		8.4	Solve problems involving the intersection of two circles.
	9. Circular Measure	9.1	Solve problems involving the arc length and sector area of a circle, including knowledge and use of radian measure.
Year 11 Term 2	10. Trigonometry	10.1	Know and use the six trigonometric functions of angles of any magnitude.
		10.2	Understand and use the amplitude and period of a trigonometric function.
		10.3	Draw and use the graphs of trigonometric functions.
		10.4	Use the Pythagorean trigonometric identities.
		10.5	Solve trigonometric equations for a given domain.
		10.6	Prove trigonometric relationships.
	11. Permutations and Combinations	11.1	Recognise the difference between permutations and combinations.
		11.2	Know and use the notation n! and formulas for permutations and combinations.
		11.3	Solve problems on arrangement and selection using permutations or combinations.
	14. Calculus	14.1	Understand the idea of a derived function.
		14.2	Use notations for derivatives.
		14.3	Know and use the derivatives of standard functions.
		14.4	Differentiate products and quotients of functions.
		14.5	Use differentiation to find gradients, tangents, and normals.
		14.6	Use differentiation to find stationary points.
		14.7	Apply differentiation to connected rates of change.
		14.8	Apply differentiation to practical problems involving maxima and minima.
		14.9	Use first and second derivative tests to discriminate between maxima and minima.
Year 11 Term 3		14.1	Understand integration as the reverse process of differentiation.
		14.11	Integrate sums of terms in powers of x.
		14.12	Integrate functions of specific forms.
		14.13	Evaluate definite integrals and apply integration to evaluate plane areas.
		14.14	Apply differentiation and integration to kinematics problems.
		14.15	Draw and use graphs related to kinematics.
	12. Series	12.1	Use the binomial theorem for expansion of (a + b)^n for positive integer n.
		12.2	Use the general term of a binomial expansion.
		12.3	Recognise arithmetic and geometric progressions.
		12.4	Use formulas for the nth term and the sum of the first n terms.
		12.5	Use the condition for convergence of a geometric progression and the formula for the sum to infinity.
	13. Vectors in Two Dimensions	13.1	Understand and use vector notation.
		13.2	Know and use position vectors and unit vectors.
		13.3	Find the magnitude of a vector; add and subtract vectors and multiply vectors by scalars.
		13.4	Compose and resolve velocities.