Personalised Learning Checklist

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MEI A Level Maths/Further Maths **Module C1** **1. Assumed Knowledge from GCSE**			
Be able to solve linear equations in one unknown.			
Be able to solve linear simultaneous equations in two unknowns.			
Know the equation			
Be able to calculate the distance between two points.			
Be able to find the co-ordinates of the midpoint of a line segment joining two points.			
Know how to plot a curve given its equation.			
2.Algebra			
Be able to change the subject of a formula.			
Know how to solve an equation graphically.			
Be able to solve quadratic equations.			
Be able to find the discriminant of a quadratic function and understand its significance.			
Be able to complete the square to find the symmetry line and turning point of a quadratic function.			
Be able to solve simultaneous equations in two unknowns where one equation is linear and one is of 2nd order.			
Know the significance of points of intersection of two graphs with relation to the solution of simultaneous equations.			
Be able to solve linear inequalities.			
Be able to solve quadratic inequalities.			

Be able to use and manipulate surds.			
Be able to rationalise the denominator of a surd.			
Understand and be able to use the laws of indices for all rational exponents.			
Understand the meaning of negative, fractional and zero indices.			
3. Co-ordinate Geometry			
Know how to specify a point in Cartesian co-ordinates in two dimensions.			
Know the relationship between the gradients of parallel lines and perpendicular lines.			
Be able to form the equation of a straight line.			
Be able to draw a line when given its equation.			
Be able to find the point of intersection of two lines.			
Know how to find the point of intersection of a line and a curve.			
Know how the find the point(s) of intersection of two curves.			
Understand that the equation of a circle, centre (0, 0), radius *r* is $x^2 + y^2 = r^2$			
Understand that $(x-a)^2 + (y-b)^2 = r^2$ is the equation of a circle with centre (a,b) and radius r			
Know that the angle in a semicircle is a right angle;			
Know that the perpendicular from the centre of a circle to a chord bisects the chord;			
Know that the tangent to a circle at a point is perpendicular to the radius through that point.			
4.Polynomials			
Know how to add, subtract, multiply and divide polynomials.			

Understand the factor theorem and know how to use it to factorise a polynomial.			
Know how to use the factor theorem to solve a polynomial equation.			
Know how to use the factor theorem to find an unknown coefficient.			
Understand the remainder theorem and know how to use it.			
Know how to sketch the graphs of polynomial functions.			
Know how to use Pascal's triangle in the binomial expansion of $(a + x)^n$ where n is a positive integer.			
Know the notations and , and their relationship to Pascal's triangle.			
Know how to use in the binomial expansion of where n is a positive integer			
5. Curve Sketching			
Understand the difference between sketching and plotting a curve.			
Know how to sketch a quadratic curve with its equation in completed square form.			
Know how to sketch the curve of a polynomial in factorised form.			
Know how to sketch curves of the forms $y = f(x - b)$ and $y = f(x) + a$, given the curve of $y = f(x)$			
6. Proof			
Understand and be able to use mathematical language, grammar and notation with precision.			
Be able to construct and present a mathematical argument.			