Personalised Learning Checklist	R	A	G
MEI A Level Maths/Further Maths **Module C2** **1. Assumed Knowledge from GCSE**			
Know how to solve problems involving right-angled triangles using trigonometry.			
2. Logarithms			
Understand the meaning of the word logarithm.			
Understand the laws of logarithms and how to apply them.			
Know the values of $\log_a a$ and $\log_a 1$			
Know how to convert from an index to a logarithmic form and vice versa.			
Know the function $y = a^x$ and its graph			
Be able to solve an equation of the form $a^x = b$			
Be able to reduce the equations $y = ax^n$ and $y = ab^x$ to linear form			
Be able to draw a graph of $y = ax^n$ and $y = ab^x$ using experimental data, to find the values of a,n and a,b			
3. Sequences and Series			
Know what a sequence of numbers is and the meaning of finite and infinite sequences.			
Know that a sequence can be generated using a recurrence relation of the form $a_{k+1} = f(a_k)$			
Know that a sequence can be generated using a formula for the kth term			
Know what a series is.			
Be familiar with $\sum$ notation.			
Know and be able to recognise the periodicity of sequences.			

Know the difference between convergent and divergent sequences.			
Know what is meant by arithmetic series and sequences.			
Be able to use the standard formulae associated with arithmetic series and sequences.			
Know what is meant by geometric series and sequences.			
Be able to use the standard formulae associated with geometric series and sequences.			
Know the condition for a geometric series to be convergent and be able to find its sum to infinity.			
Be able to solve problems involving arithmetic and geometric series and sequences.			
4. Trigonometry			
Be able to use the definitions of $\sin \theta$ and $\cos \theta$ for any angle.			
Know the graphs of $\sin \theta$, $\cos \theta$ and $\tan \theta$ for all values of θ, their symmetries and periodicities.			
Know the values of $\sin \theta$, $\cos \theta$ and $\tan \theta$ when θ is $0°$, $30°$, $45°$, $60°$, $90°$ and $180°$.			
Be able to use (for any angle)			
Be able to use the identity $\sin^2\theta + \cos^2\theta = 1$			
Be able to solve simple trigonometric equations in given intervals.			
Know and be able to use the fact that the area of a triangle is given by ½ ab sin C			
Know and be able to use the sine and cosine rules.			
Understand the definition of a radian and be able to convert between radians and degrees.			
Know and be able to find the arc length and area of a sector of a circle, when the angle is given in radians.			
5. Differentiation			

Know that the gradient of a curve at a point is given by the gradient of the tangent at the point.			
Know that the gradient of the tangent is given by the limit of the gradient of a chord.			
Know that the gradient function dy/dx gives the gradient of the curve and the rate of change of y wrt x			
Be able to differentiate $y = kx^n$ where k is a constant, and the sum of such functions.			
Be able to find second derivatives.			
Be able to use differentiation to find stationary points on a curve: maxima, minima and points of inflection.			
Understand the terms increasing function and decreasing function.			
Be able to find the equation of a tangent and normal at any point on a curve.			
6. Integration			
Know that integration is the inverse of differentiation.			
Be able to integrate functions of the form $y = kx^n$, k a constant, $n \neq -1$, and the sum of such functions.			
Know what are meant by indefinite and definite integrals.			
Be able to evaluate definite integrals.			
Be able to find a constant of integration given relevant information.			
Know that the area under a graph can be found as the limit of a sum of areas of rectangles.			
Be able to use integration to find the area between a graph and the x-axis.			
Be able to find an approximate value of a definite integral using the trapezium rule, and comment on its accuracy.			
7. Curve Sketching			
Know how to sketch curves of the form $y = f(ax)$ and $y = af(x)$, given the curve of $y = f(x)$			

| Be able to use stationary points when curve sketching | | | |