

A Level Pure Topics	A Level Year 1	A Level Year 2	GCSE Further Maths (AQA/Edexcel) or GCSE Additional Maths (OCR/Cambridge)
Algebra			
Expanding brackets and simplifying expressions			All
Factorising (4 main types – common, difference of 2 squares, product sum and AC method)			All
Simultaneous Equations (linear and quadratic)			All
Completing The Square			All
Solving and Forming Quadratics			All
Surds			All
Linear and Quadratic Modelling			All
Solving Inequalities (linear and quadratic)			All
Solving Inequalities (rational)			All
Indices			All
Algebraic Fractions			All
Discriminant (including hidden discriminant)			All
Binomial Expansion (integers powers)			All
Binomial Expansion (fractional and negative powers)			
Polynomial Division			All
Factor theorem			All
Remainder Theorem			Edexcel and Cambridge
Partial Fractions			
Geometry			
Volume and surface area of 3D shapes (assumed knowledge)			All
Straight Line Graphs (including parallel and perpendicular lines)			All
Tangent to a circle			All
Circles (equation of a circle)			AQA, OCR and Cambridge
Trigonometry			
Bearings			All
Radians			Edexcel and Cambridge
Arc Lengths And Areas Of Sectors			Edexcel and Cambridge
Given The Value Of One Trig Function, Find Another			All
Sine/Cosine Rule			All
Identities and solving with $\sin^2 x + \cos^2 x = 1$ and $\tan x = \frac{\sin x}{\cos x}$			All
Pythagoras, SOHCAHTOA and 3D trig (assumed knowledge)			All
Trig graphs (sin, cos and tan)			All
Identities and solving with $1 + \tan^2 x = \sec^2 x$ and $1 + \cot^2 x = \operatorname{cosec}^2 x$			Cambridge
Identities and solving with reciprocal functions: $\sec x = \frac{1}{\cos x}$, $\operatorname{cosec} x = \frac{1}{\sin x}$, $\cot x = \frac{1}{\tan x}$			Cambridge
Identities and solving with double angle formulae			
Identities and solving with addition angle formulae			Edexcel
Identities and solving with $a \sin x \pm b \cos x$ or $a \cos x \pm b \sin x$ forms			
Small Angle Approximations			
Inverse Trig – finding values			
Trig graphs – reciprocal and inverse trig			
Trigonometric Models			
Exponentials and Logs			
Simplifying Expressions			Edexcel, OCR and Cambridge
Solving Logarithmic Equations			Edexcel, OCR and Cambridge
Solving Natural Logarithmic Equations			Edexcel, OCR and Cambridge
Solving exponential equations			Edexcel, OCR and Cambridge
Linear transformations			OCR Only
Exponential Models			
Proofs			
Counter Example			
Deduction			AQA
Exhaustion			
Contradiction			
Differentiation			
<small>Note: for parametric differentiation see parametric equations section</small>			
$y = x^n$ differentiation technique			All
Understanding differentiation as a connected rates of change and small increments			All
Differentiation by 1 st principles – x^n types			
Differentiation by 1 st principles – trig functions			
Finding gradients			All
Second derivative			All
Stationary points (max/min)			All
Verifying stationary points			All
Optimisation			All

Points of Inflection			
Increasing/Decreasing			AQA only
Convex/Concave			
Tangents and Normals (finding equations + other applications)			All
$f \leftrightarrow f' \leftrightarrow f''$ graphs			
Optimisation			
Differentiating x in terms of y and getting answer in terms of x			
Composite functions differentiation techniques – chain rule ($(f(x))^n, \ln f(x), e^{f(x)}, a^{f(x)}, \sin f(x)$ etc)			Cambridge Only
Product and Quotient Rule			Edexcel and Cambridge
Implicit Differentiation			
Rates of Change/Related Rates			
Integration			
Note: for parametric integration see parametric equations section			
$\int x^n$ Integration Technique			OCR and Cambridge
Finding area under a curve			OCR and Cambridge
Composite functions integration techniques ($(f(x))^n, \frac{1}{f(x)}, e^{f(x)}, \sin f(x)$ etc)			Cambridge Only
Integration by Parts			
Integration by Substitution			
Trapezium Rule			
Riemann Sums			
Differential Equations			
Sequences and Series			
Arithmetic Series			Edexcel and Cambridge
Geometric Series			Edexcel and Cambridge
Sigma Notation			Edexcel only
Recursive Sequences			OCR only
Functions			
Types of functions (one to one, many to one)			Cambridge only
Basics (notation, composite etc)			All
Finding inverses and knowing when they exist			All
Modulus (solving equalities and inequalities)			Cambridge only
Graphing			
Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)			All
Basic graphs (quartic and root)			
More advanced graphs (modulus, reciprocal trig and inverse trig)			Cambridge
Graphing a modulus graph without being given the equation			Cambridge
Transformations			All
Finding points of intersection and intercepts			
Finding a polynomial equation when given a graph			
Solving graphically			
Domain and Range			AQA and Cambridge
Numerical Methods			
Iteration			
Newton Raphson			
Parametric Equations			
Sketching			
Domain & range			
Finding Points of intersection			
Differentiation			
Integration			
Finding Areas			
Modelling			
Vectors			
2D			Cambridge
3D			
Geometric Problem Solving Types			Edexcel only

A Level Mechanics Topics	A Level Year 1	A Level Year 2	GCSE Further Maths (AQA/Edexcel) or GCSE Additional Maths (OCR/Cambridge)
Kinematics			
Displacement, velocity and time graphs			
SUVAT – constant acceleration			
Differentiating and Integrating to get displacement, velocity, acceleration – non constant accel			Edexcel, OCR and Cambridge
Projectiles			
Basic Forces			
Basic horizontal and vertical forces - finding the resultant and magnitude			
Basic diagonal forces resolving - finding the resultant, magnitude and angles			
Using $f = ma$ to solve basic problems such as boxes on tables etc			
Finding missing angles and forces in force diagrams			
Connected Particles			
Lifts			
Cars and Trailers			
Pulleys - Vertical			
Pulleys – Inclined planes			
Moments			
Flat plane – vertical forces			
Flat plane – diagonal forces			
Inclined plane – ladders			
Vectors			
Basic resolving on forces given in vector form - resultant and magnitude and finding angles			
SUVAT			
Differentiating and Integrating to get displacement, velocity, acceleration – non constant accel			

A Level Statistics Topics	A Level Year 1	A Level Year 2	GCSE Further Maths (AQA/Edexcel) or GCSE Additional Maths (OCR/Cambridge)
Data			
Sampling			
Large data set (memorised set of facts – doesn't involve maths knowledge)			
Mean calculations			
Standard deviation calculations			
Quartile Calculations – without Interpolation			
Quartile Calculations – with Interpolation			
Outliers			
Coding			
Box Plots			
Cumulative Frequency			
Histograms			
Comparing Data			
Regression and Correlation			
Definition of correlation			
Calculating the correlation coefficient r and interpreting it			
Calculating the line of best fit/least squares regression line and interpreting the slope and intercept			
Using the line of best fit to make predictions			
Exponential Models			
Set Notation			
Mutually exclusive and Independent Events			
Conditional Events			
Venn Diagrams			OCR only
Tree Diagrams			OCR only
Two Way Tables			OCR only
Distributions			
Dealing with Discrete Random Variables – Probability Distributions			
Binomial Distribution			
Normal Distribution			
Normal Approximation to Binomial (including Continuity Correction)			
Hypothesis Testing			
Binomial Distribution – performing the test, finding critical values and p values			
Normal Distribution – performing the test, finding critical values and p values			
Correlation – performing the test, finding critical values and p values			