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Pure Topics

	Year 1	Year 2	GCSE	GCSE Further Maths (AQA/Edexcel) or Additional Maths (OCR/Cambridge)
Algebra				
Expanding brackets and simplifying expressions			GCSE	All
Factorising (4 main types – common , difference of 2 squares, product sum and AC method)			GCSE	All
Simultaneous Equations (linear and quadratic)			GCSE	All
Completing The Square			GCSE	All
Solving and Forming Quadratics			GCSE	All
Surds			GCSE	All
Linear and Quadratic Modelling				All
Solving Inequalities (linear and quadratic)			GCSE	All
Solving Inequalities (rational)				All
Indices			GCSE	All
Algebraic Fractions			GCSE	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)			GCSE	All
Straight Line Graphs (including parallel and perpendicular lines)			GCSE	All
Tangent to a circle			GCSE	All
Circles (equation of a circle)				AQA, OCR and Cambridge
Trigonometry				
Bearings			GCSE	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			GCSE	All
Identities and solving with $sin^2x + \cos^2 x = 1$ and $\tan x = \frac{\sin x}{\cos x}$				All
Pythagoras, SOHCAHTOA and 3D trig (assumed knowledge)			GCSE	All
Trig graphs (sin, cos and tan)				All
Identities and solving with $1 + \tan^2 x = \sec^2 x$ and $1 + \cot^2 x = cosec^2 x$				Cambridge
Identities and solving with reciprocal functions: $\sec x = \frac{1}{\cos x}, \text{cosec}\, x = \frac{1}{\sec x}. \cot x = \frac{1}{\tan x}$				Cambridge
Identities and solving with double angle formulae				
Identities and solving with addition angle formulae				Edexcel
Identities and solving with $asinx \pm bcos\, x$ or $\text{acos}\, x \pm bsin\, x$ 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 Note: for parametric differentiation see parametric equations section				
$y = x^n$ differentiation technique			iGCSE	All
Understanding differentiation as a connected rates of change and small increments				All
Differentiation by 1st principles $- x^n$ types				
Differentiation by 1st principles – trig functions				
Finding gradients			iGCSE only	All
Stationary points (max/min)			iGCSE only	All
Points of Inflection				
Increasing/Decreasing				iGCSE only
Convex/Concave				
Tangents and Normals (finding equations + other applications)				All
$f \leftrightarrow f' \leftrightarrow f''$ graphs				

Optimisation			iGCSE only	
Differentiating x in terms of y and getting answer in terms of x				
Composite functions differentiation techniques – chain rule ($(f(x))^n, lnf(x), e^{f(x)}, a^{f(x)}, sinf(x)$ 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 ($(f(x))^n, \frac{1}{f(x)}, e^{f(x)}, sinf(x)$ 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)			GCSE	All
Finding inverses and knowing when they exist			GCSE	All
Modulus (solving equalities and inequalities)				Cambridge only
Graphing				
Basic graphs (linear, quadratic, cubic, rational exponential, log and trig)			GCSE	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			GCSE	All
Finding points of intersection and intercepts			GCSE	
Finding a polynomial equation when given a graph			iGCSE	
Solving graphically			GCSE	
Domain and Range				AQA and Cambridge
Numerical Methods				
Iteration			GCSE	
Newton Raphson				
Parametric Equations				
Sketching				
Domain & range				
Finding Points of intersection				
Differentiation				
Integration				
Finding Areas				
Modelling				
Vectors				
2D			GCSE	Cambridge
3D				
Geometric Problem Solving Types			GCSE	Edexcel only

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Mechanics Topics

Mechanics Topics	Year 1	Year 2	GCSE	GCSE Further Maths (AQA/Edexcel) or 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				

Statistics Topics

Statistics Topics	Year 1	Year 2	GCSE	GCSE Further Maths (AQA/Edexcel) or Additional Maths (OCR/Cambridge)
Data				
Sampling				
Large data set (memorised set of facts – doesn't involve maths knowledge)				
Mean and standard deviation calculations				
Quartile Calculations - Interpolation				
Outliers				
Coding				
Box Plots			GCSE	
Cumulative Frequency			GCSE	
Histograms			GCSE	
Comparing Data				
Regression and 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				
Probability				
Set Notation				
Mutually exclusive and Independent Events				
Conditional Events				
Venn Diagrams			GCSE	OCR only
Tree Diagrams			GCSE	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				