

List of Topics AS Level Mathematics

Topic	Sub Topic	Topic	Sub Topic	
1. Algebraic expressions	1.1 Index laws	2. Quadratics	2.1 Solving quadratic equations	
	1.2 Expanding brackets		2.2 Completing the square	
	1.3 Factorising		2.3 Functions	
	1.4 Negative and fractional indices		2.4 Quadratic graphs	
	1.5 Surds		2.5 The discriminant	
	1.6 Rationalising denominators		2.6 Modelling with quadratic	
3. Equations and inequalities	3.1 Linear simultaneous equations	4. Graphs and transformations	4.1 Cubic graphs	
	3.2 Quadratic simultaneous equations		4.2 Quartic graphs	
	3.3 Simultaneous equations on graphs		4.3 Reciprocal graphs	
	3.4 Linear inequalities		4.4 Points of intersection	
	3.5 Quadratic inequalities		4.5 Translating graphs	
	3.6 Inequalities on graphs		4.6 Stretching graphs	
	3.7 Regions		4.7 Transforming functions	
5. Straight line graphs	5.1 $y = mx + c$	6. Circles	6.1 Midpoints and perpendicular bisectors	
	5.2 Equations of straight lines		6.2 Equation of a circle	
	5.3 Parallel and perpendicular lines		6.3 Intersections of straight lines and circles	
	5.4 Length and area		6.4 Use tangent and chord properties	
	5.5 Modelling with straight lines		6.5 Circles and triangles	
7. Algebraic methods	7.1 Algebraic fractions	8. The binomial expansion	8.1 Pascal's triangle	
	7.2 Dividing polynomials		8.2 Factorial notation	
	7.3 The factor theorem		8.3 The binomial expansion	
	7.4 Mathematical proof		8.4 Solving binomial problems	
	7.5 Methods of proof		8.5 Binomial estimation	
9. Trigonometric ratios	9.1 The cosine rule	10. Trigonometric identities and equations	10.1 Angles in all four quadrants	
	9.2 The sine rule		10.2 Exact value of trigonometric ratios	
	9.3 Areas of triangles		10.3 Trigonometric identities	
	9.4 Solving triangle problems		10.4 Simple trigonometric equations	
	9.5 Graphs of sine, cosine and tangent		10.5 Harder trigonometric equations	
	9.6 Transforming trigonometric graphs		10.6 Equations and identities	
11. Vectors	11.1 Vectors	12. Differentiation	12.1 Gradients of curves	
	11.2 Representing vectors		12.2 Finding the derivative	
	11.3 Magnitude and direction		12.3 Differentiating x^n	
	11.4 Position vectors		12.4 Differentiating quadratics	
	11.5 Solving geometric problems		12.5 Differentiating functions with two or more terms	
	11.6 Modelling with vectors		12.6 Gradients, tangents and normal	
13. Integration	13.1 Integrating x^n		14. Exponentials and logarithms	14.1 Exponential functions
	13.2 Indefinite integrals			14.2 $y = e^x$
	13.3 Finding functions			14.3 Exponential modelling
	13.4 Definite integrals			14.4 Logarithms
	13.5 Areas under curves			14.5 Laws of logarithms
	13.6 Areas under the x-axis	14.6 Solving equations using logarithms		
	13.7 Areas between curves and lines	14.7 Working with natural logarithms		
		14.8 Logarithms and non-linear data		

Topic	Subtopic		
1. Data collection	1.1 Population and samples	2. Measures of location and spread	2.1 Measures of central tendency
	1.2 Sampling		2.2 Other measures of location
	1.3 Non-random sampling		2.3 Measures of spread
	1.4 Types of data		2.4 Variance and standard deviation
	1.5 The large data set		2.5 Coding
3. Representations of data	3.1 Outliers	4. Correlation	4.1 Correlation
	3.2 Box plots		4.2 Linear regression
	3.3 Cumulative frequency		
	3.4 Histograms		
	3.5 Comparing data		
5. Probability	5.1 Calculating probabilities	6. Statistical distributions	6.1 Probability distributions
	5.2 Venn diagrams		6.2 The binomial distribution
	5.3 Mutually exclusive and independent events		6.3 Cumulative probabilities
	5.4 Tree diagrams	8. Modelling in mechanics	8.1 Constructing a model
7. Hypothesis testing	7.1 Hypothesis testing		8.2 Modelling assumptions
	7.2 Finding critical values		8.3 Quantities and units
	7.3 One-tailed tests		8.4 Working with vectors
	7.4 Two-tailed tests		
9. Constant acceleration	9.1 Displacement-time graphs	10. Forces and motion	10.1 Force diagrams
	9.2 Velocity-time graphs		10.2 Forces as vectors
	9.3 Constant acceleration formulae 1		10.3 Force and acceleration
	9.4 Constant acceleration formulae 2		10.4 Motion in 2 dimensions
	9.5 Vertical motion under gravity		10.5 Connected particles
	10.6 Pulleys		
11. Variable acceleration	11.1 Functions of time		
	11.2 Using differentiation		
	11.3 Maxima and minima problems		
	11.4 Using integration		
	11.5 Constant acceleration formulae		

