

Mathematics Topic Lists 2017-2018

Further Maths

Unit	Topics	Unit	Topics
1 Matrices	Matrix transformations $2x1$ or $2x2$	7 Algebraic Fractions	Review - Simplifying algebraic fractions
	Use of unit square		Review - Solving fractional equations
2 Basic Number & Algebra	Rotations about the origin	8 Indices	Review: Fractional and Negative indices
	Reflections in $y=x$ +/-		Solving equations with Indices
	Enlargements, centre origin	9 Differentiation	Review - standard rules
	Combinations of Transformations		Stationary points, Increasing/Decreasing Functions
			Tangents and normals
3 Quadratics, Completing the Square	Review - fractions, indices	10 Factor Theorem	Polynomials - mixed operations
	Review - Surds, rationalising denominator		Factor theorem, polynomial division
	Review - basic algebra	11 Geometry	Perimeter and Area of Compound shapes
	Ratio		Volume
4 Simultaneous Equations	Review - rearranging formulae		Angles in Polygons
	Expanding brackets, cubics (include comparing coefficients)		Proof: angles in circles
	Review - Factorising		Circle theorems review
	Setting up equations	12 Functions	Review- function notation, composites, inverses
	Solving quadratics by factorising or formula		Functions defined over different domains
5 Inequalities	Completing the square	13 Sequences	Review: using differences, nth term linear
	Using completed square to solve quads		nth term of a quadratic sequence
6 Coordinate Geometry	Discriminant, sign consequences for roots		Limiting value of a sequence
	Sketching quadratics using comp sq, turning pts	14 Trigonometry	Review basic GCSE material
	Solving Quadratics Graphically		3D trig - line and a plane
7 Algebraic Fractions	Review - Simultaneous equations		Two planes
	Solving Simultaneous Equations Graphically		Review - Sine Rule, include ambiguous case
8 Indices	Review - Linear and quadratic inequalities		Review - Cosine Rule
	Graphical Inequalities		Using Sine and Cosine rule together
9 Differentiation	Drawing a line given its equation, gradient		Trig ratios for any size angle
	Dividing lines in a given ratio		Trig graphs
10 Factor Theorem	Parallel & perpendicular lines, Midpoints		Exact ratios - 30, 45, 60
	Applying different techniques (e.g. proof)		Trig Identities and Equations
11 Geometry	Intersections		Algebraic proof
	Equation of a circle	15 Proof	Proof: Trigonometry in triangles, Pythagoras
12 Functions	Equation of a circle		
	Intersection between line and circle		