Mathematics Big Ideas		Y7	Y8	Y9	Y10	Y11	Y12	Y13
Number	Number Properties	Primes, factors and multiples Powers and roots		Rules of indices up to negative integer powers Prime Factors and Multiples -extend to algebraic examples Powers, roots and indices - estimate powers and roots of any given number, extend to fractional powers		GCSE Foundation Number revision GCSE Higher Surds - exact calculations, simplify and rationalise the denominator	Laws of indices for all rational exponents surds - use and manipulate including rationalising the denominator (inc using conjugate)	
	Place Value and calculation (Accuracy)	Place Value and the 4 operations with integers and decimals Order of operations Rounding Using a calculator		Rounding, estimation and bounds Standard form *Integers and order of operations*	Rounding, Estimations, Bounds and Accuracy Standard Form Systematic listing Product rule for counting	GCSE Higher Trial and improvement and Iteration		
	Fractions Decimals and Percentages	Fractions - equivalence,ordering and the 4 operations including mixed numbers	Fraction, decimal, percentage equivalence		Fractions - equivalence,ordering and the 4 operations, including mixed numbers Decimals - ordering and the 4 operations	GCSE Foundation Fractions revision		
Algebra	Notation, manipulation, solving equations and inequalities	Algebraic notation Substitution Simplify expressions Forming and Solving 2 step equations	Expanding single brackets Form and solve equations with brackets Factorise to a single bracket	Equations and inequalities with unknowns on both sides Expand single and double brackets Factorise into single/double brackets (including difference of two squares) Change the subject of the formula (variable on one side)	Forming and Solving Linear Equations Expanding, Factorising and Solving Quadratic Equations Quadratics - understanding the graphs, completing the square and quadratic formula	GCSE Foundation Algebra revision Inequalities Solving equations revision Identities GCSE Higher Simultaneous equations Inequalities Functions and rearranging formula Identities and proof Algebraic fractions	Polynomials Binomial Expansion Logarithms (links with laws of indices) Proof	Rational functions and partial fractions General binomial Proof by contradiction
	Sequences, functions and graphs	Types of sequences Nth term of linear sequences Coordinates	Plot basic straight lines - y=x, y=-x x=c, y=c, c constant	Geometric sequences Straight line graphs - plotting and understanding y=mx+c Sketch and draw non-linear graphs *Algebra consolidation*	Sequences - types, nth term inc quadratic Linear Graphs	GCSE Foundation Equations on straight lines recap Quadratic graphs Sequences Quadratic Graphs revision GCSE Higher Quadratic graphs Equations of circles Sketching and recognising non-linear graphs Transforming graphs	Using graphs Quadratic function Coordinate geometry Differentiation Application of differentiation Intergration Trigonometric functions and equations Functions Further transformations of graphs Modulus functions Further trigonometry - inverse trigonometric functions, reciprocal functions, compound angle formula	Calculus of exponential and trigonometric functions Further differentiation Further integration Further applications of calculus Differential equations Sequences and series Numerical solutions of equations Numerial integration
Ratio and Proportion			Percentage - of amounts, mulipliers, increase and decrease, reverse Ratio - Equivalence, recipes, sharing, links to fractions and linear functions	Compound measures Real life graphs and compound measures -including piece-wise linear, exponential and reciprocal graphs -speed, unit pricing and density Direct and inverse proportion	Percentages Ratio and Proportion Units of Measure Compound Measures Real life graphs	GCSE Foundation Direct and inverse proportion Ratio revision Real life graphs Growth and Decay - Percentages inc compound interest GCSE Higher Direct and inverse proportion Speed time graphs gradients as rates of change Growth and decay (exponentials)	Exponential models Rates of change	
Geometry	Properties and constructions	Angle facts - on a line, around a point, in polygons and vertically opposite	Properties of 2D shapes Properties and 2D representations of 3D shapes Transformations	Construction Loci Angles in parallel lines Congruence and similarity *Angles in parallel lines* *Types of triangles and quadrilaterals*	Transformations Angles in Polygons Congruence and Similarity Plans and Elevations Construction and Loci	GCSE Foundation Angle revision GCSE Higher Circle theorems		
	Mensuration and calculation	Perimeter Area - rectangles, parallelograms and triangles Drawing & measuring angles Bearings	Area - trapezia and compound shapes Area and circumference of circles Volume and surface area - Prisms, cylinders and composite shapes Pythagoras in 2D	Trigonometry in right angled triangles	Area and Perimeter 3D shapes - inc surface area and volume Pythagoras and Trigonometry (right angled triangles) Bearings and Scale Drawings	GCSE Foundation Area revision Trigonometry and pythagoras revision GCSE HIgher Sine rule, cosine rule and area of a triangle	Triangle Geometry - sine, cosine rule, area of a triangle **Radian Measure**	
	Vectors		Transformations - translations and enlargements			Vectors	Vectors *Mechanics* *Introduction to kinematics* *Motions with constant acceleration* *Force and motion* *Objects in contact*	*Mechanics* *Application of vectors* *Projectiles* *Forces in context* *Moments*
Statistics			Collecting and tabulating data Statistical Diagrams (Line graphs, Bar charts, Pictograms, Pie Charts) Scatter graphs and correlation Averages and Range (including ungrouped frequency tables)		Collecting Data and find Averages Presenting Data Scatter graphs	GCSE Foundation Averages and statistics revision	Working with data - measures of central tendency and spread - standard deviation, outliers Sampling method Presenting data - cumulative frequency, box plots, histograms Working with a large data set Product moment correlation coefficient	
Probability			Probability (use of FDP, Sample spaces, Relative Frequency, Mutually Exclusive events, Expected values, Venn Diagrams)		Probability (use of FDP, Sample spaces, Relative Frequency, Mutually Exclusive events, Expected values) Venn Diagrams Tree Diagrams		Probability - Independent events, mutually exclusive events, two way tables, probability distributions, binomial distribution Statistical hypothesis testing with a binomial distribution	Conditional Probability Normal Distribution Hypothesis testing - with normal distribution and Product moment correlation coefficient