Year 7

Topic	Detail
Sequences	Exploring all types of sequence, term to term
Understanding and using algebraic notation	Use of function machines, forming and substituting into expressions, functions graphically.
Equality and equivalence	Expression equivalence. Forming and solving one step equations, collecting like terms
Place value, integers and decimals	Place value, ordering, range and median, rounding
Fraction, decimal percentage equivalence	FDP equivalence, pie charts, fractional sequences. ASSESSMENT 1
Addition, subtraction, multiplication and division	using formal methods, solve problems in context with perimeter, area money, frequency trees and tables. HCF/LCM, BIDMAS, solving two step equatuons
Four operations with directed number	Order directed numbers, calculate using directed number
addition/subtraction of fractions	Add subtract fractions different denominators, use equivalent fractions. ASSESSMENT 2
Developing number sense	Mental strategies, known facts to derive other facts - inc algebraically
Sets and probability	Understand set notation, venn diagrams and probability of an event
Prime numbers and proof	types of number, primes, powers and roots, counter examples.
Constructing, measuring and using geometric notation	Drawing, measuring lines and angles, parallel/perpendicular, SSS, SAS, ASA
Develop geometric reasoning	Calculate using angle facts, around a point, vertically opposite, triangles and quadrilaterals ASSESSMENT 3

Year 8

Topic	Detail
Ratio and scale	Understand ratio, simplifying, link to multiplication, solve problems involving ratio, circumference of circles
Multiplicative change	Use scale factors with direct proportion and with scales and maps
Multiplying and diving fractions	Multiply and divide fraction by integer and by fractions
Coordinates	Plotting straight lines, equations of horizontal and vertical lines, link with expressions
Collecting and representing data	Scatter graphs and correlation, two way tables, listing outcomes
Tables	Probability sample space tables ASSESSMENT 1
Brackets, equations and inequalities	Expand single brackets, form expressions, form and solve equations and inequalities
sequences	Using more complex rules, brackets and squared terms
Indices	Writing expressions with powers (extension: factorising, expanding binomials, nth term of linear sequences)
Fractions and percentages	Revisit FDP equivalence, one number as percentage of another
Standard Form	Conversion between standard and ordinary form, ordering.
Number sense	Revisit BIDMAS, measures and units, estimation and mental strategies. ASSESSMENT 2
Angles in parallel lines and polygons	Review year 7 angle facts, angles in special quadrilaterals, angles in polygons
Area of Trapezia and circles	Review area of shapes Year 7. Area trapezium, circles and compound shapes
Symmetry and reflection	Line symmetry in polygons, reflecting shapes
Data Handling cycle	Collecting data, constructing and interpreting charts
Averages	Revisit Mode, median and mean, inc. from grouped data ASSESSMENT 3

Year 9

Topic	Detail
Number types	4 operations, directed number, LCM/HCF, prime factors, inverse operations,
Fractions	Order fractions, use all 4 operations, mixed/improper and solving
Ratio and Proportion	Link to fractions, simplifying, sharing, multiplicative relationship, graphically. Proportion
Percentages	Basic percentage, percentage change, increase/decrease, reverse and simple interest and intro to percentage multipliers ASSESSMENT 1
Estimating and approximating	Rounding to decimal places/significant figures, bounds and error interval
Algebraic expressions	All notation, simplifying, basic expanding and common factors
Solving equations and formulae	Substitution, Solve equations inc. unknowns on both sides, change subject of formulae
Linear graphs and coordinates	Plot $y = mx + c$, identify parallel lines, explore gradients, draw other graphs ASSESSMENT 2
Perimeter and area	Perimeter and Area of all shapes, inc circles. Higher: inc. sectors and arc lengths
Volume	Volumes of prisms, cones, spheres and pyramids. ASSESSMENT 3
Collecting and representing data and averages	Pie charts, stem and leaf, two way tables, time series. Calculate the three averages, compare using average and spread
Scattergraphs	Use and interpret, recognise correlation, make predictions
Indices	Calculate using indices, use index laws inc. negative and fractional indices
Standard form	Place value, calculate and interpret standard form (calc and non-calc) ASSESSMENT 4
Probability	All probability. Single events, combined events, relative frequency, tree diagrams, conditional probability, venn diagrams
Angles	All notation, at a point, straight line, vertically opposite and with parallel lines.
Properties of polygons	Special quadrilaterals, angles in polygons, exterior and interior
Transformations	Reflect, rotate, translate and enlarge (positive and negative scale factors)
Pythagoras' Theorem and trigonometry	Know and use pythagoras' theorem and trig ratios

Year 10

Topic	Detail
Review: Number types	4 operations, directed number, LCM/HCF, prime factors. GCSE problem solving
Compound measure	Speed, density and pressure. Upper and lower bounds, error intervals and calculations using bounds
Review: expressions and equations	Substitution, simplifying, solving all types of linear equations.
Review: Angles	All notation, at a point, straight line, vertically opposite and with parallel lines.
Properties of polygons	Special quadrilaterals, angles in polygons, exterior and interior
Circle theorems	Apply and prove the 8 circle theorems ASSESSMENT 1
Indices and surds	Calculate using indices, use index laws inc. negative and fractional indices, simplify surds
review: Standard form	Place value, calculate and interpret standard form (calc and non-calc)
y = mx + c and gradients	Plot $y = mx + c$, identify parallel and perpendicular lines, find equations of lines
Review: Fractions	Order fractions, use all 4 operations, mixed/improper and problem solving ASSESSMENT 2
Percentages multipliers	Basic percentage, percentage change, increase/decrease, reverse and multipliers for growth and decay
Review: Ratio and Proportion	Solving problems using ratio, combined ratios
Quadratics	Expanding two/three binomials, factorise quadratics, change the subject, complete the square. Solve by factorising and drawing quadratic graphs
Proof	Argue mathematically to show equivalence, use algebra to prove
Algebraic fractions	Simplifying algebraic fractions by factorising and using the four operations with equivalence
Perimeter and area	Review: Perimeter and Area of all shapes, inc circles and sectors and arc lengths.
Volume	Volumes of prisms, cones, spheres and pyramids ASSESSMENT 3/4
Probability and Sets	All probability. Single events, combined events, relative frequency, tree diagrams, conditional probability, venn diagrams
review: transformations	Reflect, rotate, translate and enlarge (positive and negative scale factors). Invariance
Statistics	Revisit all previous representations inc boxplots, cumulative frequency, histograms and all measures of average and spread. Compare distributions
Pythagoras' Theorem and trigonometry	Revisit all Pythag and trig inc exact values.
Constructions and Loci	perpendicular bisector, angle bisect, and loci problems

Year 11

Topic	Detail
Quadratic equations	Solving quadratic equations and inequalities using factorising and the formula. Simultaneous eqn linear and quadratic. Sketching quadratic graphs
Further graphs	Plotting/drawing graphs of quadratics, cubics, reciprocals, circles and exponentials.
Pre-calculus	Gradients of tangents to curves, area under curves. In context
Sequences	nth terms of linear and quadratic sequences. Revisit all other types
Direct and Inverse Proportion	Construct and interpret equations that describe direct and inverse proportion. Graphs
Functions	Composite and inverse functions
iteration	Approximate solutions to equations using iteration MOCK1
Sine cosine rules	Know and apply the sine and cosine rules inc area of triangle
Vectors	Use vectors to construct geometrical proofs
Congruence and similarity	Conditions for congruence and proof, similar shapes, lengths areas and volumes
Further graphs and transformations	Revisit all graph work and inc trig graphs and transformations of graphs (only reflections and translations) MOCK 2

Year 12

Topic	Detail
Algebra and functions	Indices and surds, solving quadratics, completing the square, inequalities, graphs of quadratics, cubics, quartics,reciprocal functions
Coordinate geometry	equation of a straight line, equation of circles (any centre)
Introduction to Mechanics	Straight line Kinematics (SUVAT)
Further Algebra	
Statistics: Data presentation	
Calculus: Introduction to differentiation	From first principles, general case for polynomials and applications to stationary values, inc/dec functions,
Algebra and Functions 2	
Trigonometry	Solving Trig equations inc. quadratics, use of Pythagoras' theorem
Calculus: Introduction to integration	Integrating as reverse process of differentiation, applications to area under curve
Statistics: Probability, Statistical distributions and Hypothesis testing	
Vectors	2D vectors, geometrical proofs, magnitude and direction
Mechanics	Forces, Newtons laws and further kinematics with calculus
Exponentials and Logarithms	Introduction to logs and their rules, solving equations using logs and exponentials, log and exponential graphs

Year 13

Topic	Detail
Series and Sequences	Arithmetic and Geometric Progressions. Recursive relations
Rational functions and Partial Fractions	Four operations with rational functions. Partial fractions inc. repeated factors
Further Trigonometry	Radians, arc length, sector area, further solving equations inc sec, cosec and cot, addition formulae and double angle
Calculus: Further differentiation	Differentiation of the following functions: trig, exp, logs, chain rule, product rule and quotient rule. All applications
Functions and modelling	
Calculus: Further integration	Integrating: trig functions, exp, logs, substitution and parts
Mechanics:	Moments, Forces at any angle, application of forces and further kinematics
Statistics	Regression and correlation, Normal Distribution
Binomial	
Parametric Equations	
Numerical Methods	Newton-Raphson,
Further Vectors	3D vectors, geometrical proofs, magnitude and direction