

MAIN TOPIC	KS3 or KS4 UNITS	Y7	Y8	Y9	Y10	Y11
NUMBER	KS3 WHOLE NUMBERS/DECIMALS KS3 WHOLE NUMBER CALCULATIONS KS4 CALCULATIONS 1 KS4 MEASURES & ACCURACY KS4 CALCULATIONS 2	Place value, written and mental methods, using a calculator, rounding (nearest power of 10), order of operations, Calculator methods.	Multiply/divide integers/decimals/negatives, identifying factors/primes/squares/cubes/roots, rounding (integers/decimals), mental/written strategies.	Rounding (DP/SF), HCF/LCM from prime factor decomposition, estimating and approximating using rounding, four operations consolidation, upper/lower bounds, further calculator methods.	Rounding (DP/SF/estimation), order pos/neg integers/fractions/decimals, mental/written/calculator methods, order of operations (multi stage), problem solving with calculations, error intervals, truncation, bounds.	RETRIEVAL PRACTICE INTERLEAVING SPACED PRACTICE PLC-BASED ITERATIVE TESTING (NUMBER)
	KS3 FRACTIONS/DECIMALS /PERCENTAGES (FDP) KS4 RATIO/PROPORTION	Convert between FDP. Finding the fraction and percentage of an amount, simplifying fractions.	Ordering decimals, adding/subtracting fractions, calculating fractions/% of amounts.	Four operations with fractions, percentage change, repeated percentage change.	Convert between fractions, decimals (including terminating and recurring) and percentages, order FDP, 4 operations with FDP, fractions and percentages of amounts, percentage change & repeated/reverse), simple and compound interest, FDP in the context of other units eg RATIO.	RETRIEVAL PRACTICE INTERLEAVING SPACED PRACTICE PLC-BASED ITERATIVE TESTING (NUMBER)
	KS3 FACTORS/MULTIPLES KS4 FACTORS/POWERS/ROOTS KS4 CALCULATIONS 2	Finding factors and multiples, LCM/HCF, squares/roots, prime numbers.	HCF/LCM from prime factor decomposition.	Indices, surds, standard form.	Know and use the language of primes/factors/multiples, HCF/LCM (from prime factor decomposition AND Venn diagrams), estimate square/cube roots of integers, index laws, simplify surds (including rationalising the denominator).	Perform calculations involving roots and indices (including negative, fractional and algebraic). Perform calculations involving exact form (including fractions, surds and Pi).
ALGEBRA	KS3 EXPRESSIONS/FORMULAE KS4 EXPRESSIONS KS4 FORMULAE/FUNCTIONS	Use letters for unknown values, collect like terms, substitution, derive simple formulae.	Expand brackets, manipulate algebraic terms/fractions.	Formulae in context, rearranging formulae, factorising algebraic expressions.	Use algebraic notation, simplify expressions, substitution, index laws, expand brackets (including double/triple), Factorise expressions (including quadratic), manipulate algebraic fractions, rearrange formulae, inverse and composite functions, algebraic proofs, advanced quadratic techniques.	RETRIEVAL PRACTICE INTERLEAVING SPACED PRACTICE PLC-BASED ITERATIVE TESTING (ALGEBRA)
	KS3 GRAPHS KS4 GRAPHS 1 KS4 GRAPHS 2	Plot coordinates in 4 quadrants, use a formula to complete a table of values, plot straight line graphs.	Draw and interpret real life/time series/conversion graphs. Understand lines parallel to axes.	Understand gradient, $y=mx+c$, non linear graphs.	Equation of a line in the form $y=mx+c$, parallel/perpendicular gradients, quadratic graphs (including roots, intercepts and turning points), kinematic graphs (distance, speed, acceleration).	Quadratic graphs (including graphical solutions), recognise/ sketch/plot non linear functions (including reciprocal/exponential/trigonometrical), approximate gradient of a curve, area under a graph, equations of circles/tangents).
	KS3 EQUATIONS KS4 EQUATIONS/INEQUALITIES	Understand and use inverse operations, construct and solve one/two step equations.	Solve one/two step equations with brackets/unknowns on both sides, worded equation problems.	Equations involving algebraic fractions, simultaneous equations, trial and improvement.	Derive & solve linear equations, derive and solve simultaneous equations (including quadratic), iterative solutions, solve linear and non linear inequalities (including representing solutions on number lines & graphs).	RETRIEVAL PRACTICE INTERLEAVING SPACED PRACTICE PLC-BASED ITERATIVE TESTING (ALGEBRA)
	KS3 SEQUENCES KS4 SEQUENCES	Find patterns in sequences, generate terms using a rule, describe term-to-term rules.	Position-to-term, nth term rule, real life sequences.	Sequences in context, quadratic nth term, recursive (iterative) sequences.	Iterative processes (in the context of EQUATIONS & INEQUALITIES).	Term-to-term/position-to-term rules, generating nth term rules (including linear and quadratic), Special sequences (including square/cube/triangular/ arithmetic/ geometric/Fibonacci).
RATIO & PROPORTION	KS3 RATIO/PROPORTION KS4 FDP KS4 RATIO/PROPORTION UNITS/PROPORTIONALITY	Ratio notation, simplifying ratios, use ratio to compare quantities, solve simple ratio problems.	Divide an amount using a ratio, proportion in context (FDP), using direct proportion.	Calculate with ratios, further proportional reasoning including financial problems.	Convert between FDP, order FDP, 4 operations with FDP, fractions and percentages of amounts, percentage change (including repeated), simplify ratios, divide an amount using a ratio, direct proportion, ratio calculations, RATIO in the context of other units eg ALGEBRAIC, n:1 form).	Compound units and measures, solve direct & inverse proportion problems, interpret direct/inverse proportion graphs, interpret gradient as a rate of change, growth and decay problems, repeated proportional change problems.
GEOMETRY & MEASURES	KS3 MEASURES, /PERIMETER/AREA KS4 MEASURES/ACCURACY KS4 WORKING IN 2D	Read a measuring scale, convert between metric units, area and perimeter of 2D shapes.	Use appropriate units of measure (mass, length, etc), convert between metric and imperial units.	Area and circumference of a circle, compound measures.	Use, and convert between, standard units of length/mass/capacity/ other measures (including compound measures), solve problems involving SDT/DMV/PFA, know and apply formulae for the area of common 2D shapes, calculate the area of composite shapes.	RETRIEVAL PRACTICE INTERLEAVING SPACED PRACTICE PLC-BASED ITERATIVE TESTING (GEOMETRY & MEASURES)
	KS3 ANGLES/2D SHAPES KS4 ANGLES/POLYGONS KS4 CIRCLES/CONSTRUCTIONS	Draw/measure/calculate angles, angle facts, properties of triangles/quadrilaterals.	Properties of quadrilaterals/polygons, further angle facts & calculations.	Interior/exterior angles of polygons, angles in parallel lines, congruence, arcs/sectors.	Use angle facts (including at a point/on a line/ at an intersection/ parallel angles), properties of polygons (including regularity/ interior/exterior angles), use congruence to prove geometrical results, circle properties and formulae, prove and apply circle theorems.	RETRIEVAL PRACTICE INTERLEAVING SPACED PRACTICE PLC-BASED ITERATIVE TESTING (GEOMETRY & MEASURES)
	KS3 TRANSFORMATIONS WORKING IN 2D KS4 PYTHAGORAS/TRIGONOMETRY	Recognise, describe & draw rotations/reflections/translations, understand tessellation.	Recognise/describe/draw combinations of transformations, symmetry, enlargements.	Vectors, fractional/negative scale factors, maps and scale drawings, bearings, similarity.	Recognise/describe/draw ALL single and combined transformations (reflections/ rotations/translations-including vector column notation/enlargements- including negative and fractional scale factors), understand invariance in the context of transformations, solve worded problems involving scale drawings & bearings.	Column vector notation/addition, vector diagrams, vector techniques & geometrical proofs (including use of scalar multiples, mid points, RATIO, parallel conditions).
	KS3 CONSTRUCTIONS KS4 CIRCLES/CONSTRUCTIONS PYTHAGORAS/TRIGONOMETRY	Construct triangles/scale drawings, construct nets of 3D shapes.	Construct bisectors, use and interpret scale drawings, bearings, simple loci.	Further constructions/ loci, Pythagoras' theorem.	Use standard ruler and compass constructions, solve problems involving loci.	Know and apply Pythagoras' theorem across a range of 2D and problems in context.
	KS3 3D SHAPES KS4 WORKING IN 3D KS4 PYTHAGORAS/TRIGONOMETRY KS4 UNITS & PROPORTIONALITY	(Construct nets of 3D shapes-covered in the CONSTRUCTIONS unit, above.)	Isometric plans and elevations, surface area/volume of cuboids & prisms.	Nets/plans/elevations, 3D symmetry, SA/volume of prisms. Pythag in 3D, Intro to trigonometry.	Identify faces/ edges/vertices, construct & interpret nets/plans/elevations of 3D shapes, calculate surface area/volume of cuboids/prisms/spheres/pyramids/cones/composite 3D shapes.	Similarity (length/area/volume scale factors), trigonometric ratios, exact trig values, sine/cosine rules, sine formula for triangle area. Apply trig techniques in the context of other units (ALGEBRAIC/SURDS).
PROBABILITY & STATISTICS	KS3 STATISTICS KS4 HANDLING DATA 1 KS4 HANDLING DATA 2	Construct & interpret bar/pie charts, calculate averages, compare data.	Frequency diagrams, scatter graphs, averages from frequency tables.	Averages from grouped tables, stem & leaf diagrams, cumulative frequency graphs, box plots.	Statistical vocabulary (including bias & sampling methods), organising data, representing data, interpreting data, averages & measures of spread, comparing data sets.	Representing discrete/continuous/grouped data, correlation/causation, histograms, cumulative frequency, box plots, time series data.
	KS3 PROBABILITY KS4 PROBABILITY KS4 COMBINED EVENTS	Probability vocabulary, probability scale, experimental/theoretical probability, intro to Venn diagrams.	Equally likely outcomes, estimating probability, use Venn diagrams.	Mutually exclusive/independent events, sample space diagrams, tree diagrams.	Use experimental data to estimate probabilities, calculate/compare theoretical & experimental probabilities, recognise and understand mutually exclusive/independent/ exhaustive events.	Use Venn diagrams to represent sets/calculate outcomes & probabilities, construct an interpret possibility space diagrams, use frequency/tree diagrams to show the outcomes of 2 or more events (algebraic/quadratic contexts).