Unit	Year 7 Year 8	Year 9
	Stage 5	
Number	Round off numbers accurately to estimate Rounding to dp and sig fig Use approximation through rounding to estimate answers and calculate possible resulting errors expressed through inequality Use a calculator to calculate results accurately and interpret them Order positive and negative numbers, fractions and decimals and use <>= Use the vocabulary of number work Highest common factor, lowest common multiple, prime factors Understand integers and roots Use conventional notation for the priority of operations for brackets, powers, root, reciprocals. Understand standard form Interpret and compare numbers in standard form Use, simplify and interpret algebraic notation Basic algebra notation and substitution Algebra in linear equations and find the nth term Using algebra for substitution and change the subject Creating formulae and expressions Collecting like terms and multiply out single brackets Generate terms of a sequence	Integers, real and rational numbers Understand and use surds Work with directed number Solve problems with integers Solve problems with decimals HCF and LCM Adding and subtracting fractions Multiplying and dividing fractions Solve problems with fractions Numbers in standard form Solve problems with bills and bank statements Calculate simple interest Calculate compound interest Solve problems with VAT Calculate wages and taxes Solve problems with exchange rates Solve unit pricing problems

Unit	Year 7 Year 8	Year 9
	Stage 5	
Fractions, decimals and percentages	Understand and work with proper and improper fractions 4 operations of fractions and decimals in positive and negative numbers Work interchangeably with terminating decimals and their corresponding fractions eg 3.5 and 7/2 Introduce fractions/decimal/% work Find % of a value and compare different values % increase and decrease Solve problems involving % change including increase/decrease and original problems and simple interest	Use equivalence of fractions, decimals and percentages Calculate percentage increase and decrease Express change as a percentage Solve reverse percentage problems Recognise and solve percentage problems Solve problems with repeated percentage change

Unit	Year 7 Year 8	Year 9
	Stage 5	
Geometry	Accurately draw parallel lines, perpendicular, regular polygons etc. Draw/measure line segments Use formulae for perimeters/areas of shapes including triangles, parallelograms, trapezia, volume of cuboids and other prisms Labelling sides and angles of a triangle Construct triangles, congruent and similar. Know the faces and vertices etc of 3D shapes Problem solving of areas of shapes including circles Finding the perimeter and area of shapes using formulae Volumes of cylinders Understand that equal areas does not equal perimeters Recognise when it is possible to use formulae for area and volume of shapes Area of parallelograms and triangles Calculate, estimate and compare volume of cubes and cuboids using standard units including cubic centimetres and cubic meters, extending to other units Calculate and solve problems involving perimeters of 2D shapes, areas of circles and composite shapes Derive and use the sum of angles in a triangle to deduce the angle sum in any polygon and derive properties of regular polygons Apply angle facts and properties of quadrilaterals to derive results about angles and side including Pythagoras theorem and use known results to obtain simple proof Use the properties of faces, edges and vertices of cubes, prisms, cylinders, pyramids, cones and spheres to solve problems in 3D Interpret mathematical relationships both algebraically and geometrically	Angles in parallel lines Solve angle problems using chains of reasoning Angle problems with algebra Conjectures with angles Conjectures with shapes Link constructions and geometrical reasoning Identify the order of rotational symmetry of a shape Compare and contrast rotational symmetry with line symmetry Rotate a shape about a point on a shape Rotate a shape about a point not on a shape Translate points and shapes by a given vector Compare rotation and reflection of shapes Find the result of a series of transformations Squares and square roots Identify the hypotenuse of a right-angled triangle Determine whether a triangle is right-angled Calculate hypotenuse of a right-angled triangle Calculate missing sides in right angled triangles Use Pythagoras' theorem on coordinate axes Explore proofs of Pythagoras' theorem Identify congruent figures Explore congruent figures Identify congruent triangles Know names of 2D and 3D shapes Recognise prisms including the language of edges and vertices Accurate nets of cuboids and other 3D shapes Sketch and recognise nets of cuboids and other shapes Plans and elevations Find areas of 2D shapes Surface area of cubes and cuboids Surface area of triangular prisms Surface area of a cylinder Volume of cubes and cuboids Volume of other 3D shapes – prisms and cylinders Explore volumes of cones, pyramids and spheres

Unit	Year 7 Year 8	Year 9
	Stage 5	
Measurement	Convert between miles and kilometres Change between different standard units up to 3 dp Solve problems involving the calculation and conversion of units of measure using decimal notation up to 3dp Scale drawing of maps/pictures using scales	Solve speed distance and time problems with and without a calculator Use distance time graphs Solve problems with mass density and volume Solve flow problems at their graphs Rates of change and their units Convert compound units

Unit	Year 7 Year 8	Year 9
	Stage 5	
Operations/ algebra	Understand the relationship between operations and their inverses 4 operations of integers and decimals for positive and negative numbers 4 operations of fractions and decimals in positive and negative numbers Substitute values into formula and expressions and simplify Start including brackets , powers roots and reciprocals in formulae Generate terms of a sequence from either a term-to-term or a position to term rule	Understand lines parallel to the axes, y = x and y = -x Using table of values Compare gradients Compare intercepts Understand and use y =mx + c Write an equation in the form y =mx + c Find the equation of a line from a graph Interpret gradients and Intercepts of real life graphs Model real life graphs involving inverse proportion Explore perpendicular lines One and two step equations and inequalities Equations and inequality with brackets

Unit	Year 7 Year 8	Year 9
	Stage 5	
Operations/ algebra	Understand the relationship between operations and their inverses 4 operations of integers and decimals for positive and negative numbers 4 operations of fractions and decimals in positive and negative numbers Substitute values into formula and expressions and simplify Start including brackets , powers roots and reciprocals in formulae Generate terms of a sequence from either a term-to-term or a position to term rule	Inequalities with negative numbers Solve equations with unknowns on both sides Solve inequality with unknown to both sides Equations and Inequalities in other mathematical contexts Formula and equations Rearrange one and two step formula Rearrange complex formula Factors multiples and primes Always sometimes never true Show that Make conjectures about number Expand a pair of binomials Conjecture with algebra Explore the 100 grid Expand 3 binomials Draw and interpret quadratic graphs Interpret graphs, including reciprocal and piece-wise Investigate graphs of simultaneous equations Represent inequalities

Unit	Year 7 Year 8	Year 9
	Stage 5	
Position and direction	Use of ruler and compasses correctly Describe sketch and draw using conventional terms and notations Draw and measure angles of shapes Draw and measure line segments and angles in geometric figures including interpreting scale drawings Angle facts for triangle congruence and quadrilaterals Parallel lines, alternate and corresponding angles in 4 quadrants Angles at a point, parallel lines, opposite angles and corresponding angles Know and use the criteria for congruence of triangles Recognise and use the perpendicular distance from a point to a line as the shortest distance Identify properties and describe the results of translations, rotations and reflections to a given point Draw translations, reflections and rotations	Draw and measure angles Construct and interpret scale drawings Locus of distance from a point Locus of distance from a straight line Locus equidistant from 2 points Construct a perpendicular bisector Construct a perpendicular point Locus of distance from 2 lines Construct an angle bisector Construct triangles from given information

Unit	Year 7 Year 8	Year 9
	Stage 5	
Probability	Understands that all outcomes in probability =1 Random/fair/probability events on a scale Introduce and use mean, median, mode and range for averages Can find the single and combined events for probability Random/fair/probability events on a scale	Single event probability Relative frequency – including convergence Expected outcomes Independent events Use tree diagrams Use tree diagrams to solve without replacement problems Use diagrams to work out probabilities

Unit	Year 7	Year 8	Year 9
	Stage 5		
Ratio and proportion	Introduce ratio notation including reduction to simplest form. Ratio and reduction Understand that a relationship between 2 numbers can be expressed as a ratio or fraction		Solve problems with direct proportion Direct proportion and conversion graphs Solve problems with inverse proportion Graphs of inverse relationships Solve ratio problems given the whole or a part Solve best buy problems Solve problems involving ratio and algebra