Subject	Maths	Year Group	11

	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9	Unit 10	Unit 11	Unit 12	Unit 13
Scheme title	**Ratio & Proportion**	**Right-Angled Triangles**	**Probability**	**Multiplicative Reasoning**	**Plans & Elevations**	**Constructions, Loci & Bearings**	**Quadratics**	**3D Solids**	**Fractions & Reciprocals**	**Indices & Standard Form**	**Similarity & Congruence**	**Vectors**	**Further Algebra**
Purpose of scheme	To be able to work with ratio and proportion and make links to other areas of Maths including fractions and real life contexts.	To be able to solve problems relating to angles and side lengths in 2D Geometry using appropriate strategies and formulae, including Pythagoras' Theorem and the Trigonometric ratios.	To be able to enumerate the likelihood of a single or multiple events occuring.	To be able to work with and make connections with concepts such as percentages, fractions and compound measures.	To be able to draw and describe 2D representations of 3D solids.	To develop geometrical reasoning skills within the context of constructions, bearings and map scales to solve problems with real life context.	To revisit and deepen understanding of algebraic expressions and conventions and to develop greater fluency with algebraic manipulation. This will be extended to manipulating quadratic expressions and equations; and then to forming and solving systems of simultaneous	To be able to calculate the volume and surface area of shapes that have more complex formulae	To be able to fluently operate with fractions.	To be able to calculate with powers and roots and relate these to algebraic expressions and the laws of indices. To be able to express very large and very small numbers in standard form and calculate with these.	To identify and solve problems with similar shapes. To be able to correctly identify congruent shapes and reason mathematically.	To consider how movement of 2D shapes in space can be described using vectors.	To be able to solve equations simultaneously where there is more than one unknown.
Knowledge in sequence	- Ratio - Proportion - Graphs of proportion	- Pythagoras - Trigonometry	- Calculating probabilities - Probability of two events - Experimental probability - Venn diagrams and set notation - Frequency trees - Probability trees	- Percentages - Growth and decay - Compound measures - Distance, speed and time - Direct and Inverse	- Drawing and describing shapes (2D and 3D) - 2D representations of 3D shapes	- Bearings - Congruence & Proof - Constructions & Loci	- Quadratic expressions - Quadratic equations - Quadratic graphs	- Volume and surface area of cones, cylinders and spheres	- Operate with fractions, including division as multiplication by the reciprocal	- Calculating with powers - Laws of indices - Converting between ordinary and standard form	- Identify and work with scale factors - Congruence criteria	- Translations - Vector arithmetic	- Rearrange formulae - Solve equations - Solve simultaneous
Skills	- use ratio notation, including reduction to simplest form -divide a given quantity into two parts in a given part : part or part : whole ratio - express the division of a quantity into two parts as a ratio - apply ratio to real contexts and problems (such as those involving conversion, comparison, scaling, mixing, concentrations) - understand and use proportion as equality of ratios - relate ratios to fractions and to linear functions - solve problems involving direct and inverse proportion, including graphical and algebraic representations - understand that X is inversely proportional to Y is equivalent to X is proportional to 1/Y - interpret equations that describe direct and inverse proportion - recognise and interpret graphs that illustrate direct and inverse proportion	- Know the formulae for Pythagoras' Theorem and the trigonometric ratios - Apply these formulae to find angles and lengths in right angled triangles in two dimensional figures - know the exact values of sinθ and cosθ for θ = 0°, 30°, 45° , 60° and 90° - know the exact value of tanθ for θ = 0°, 30°, 45° , 60°	- record, describe and analyse the frequency of outcomes of probability experiments using tables and frequency trees - apply ideas of randomness, fairness and equally likely events to calculate expected outcomes of multiple future experiments - relate relative expected frequencies to theoretical probability, using appropriate language and the 0 to 1 probability scale - apply the property that the probabilities of an exhaustive set of outcomes sum to 1 - apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to 1 - understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size - enumerate sets and combinations of sets	- change freely between related standard units (eg time, length, area, volume/capacity, mass) and compound units (eg speed, rates of pay, prices) in numerical contexts - express a multiplicative relationship between two quantities as a ratio or a fraction - define percentage as 'number of parts per hundred' - interpret percentages and percentage changes as a fraction or a decimal, and interpret these multiplicatively - express one quantity as a percentage of another - compare two quantities using percentages - work with percentages greater than 100% - solve problems involving percentage change, including percentage increase/decrease and original value problems, and simple interest including in financial mathematics - use compound units such as speed, rates of pay, unit pricing - use compound units such as density and	- interpret plans and elevations of 3D shapes - construct and interpret plans and elevations of 3D shapes	- Use the standard ruler and compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a given point, bisecting a given angle) - Use these to construct given figures and solve loci problems - Know that the perpendicular distance from a point to a line is the shortest distance to the line - Measure line segments and angles in geometric figures, including interpreting maps and scale drawings and the use of bearings - Use the basic congruence criteria for triangles	- Simplify and manipulate algebraic expressions by expanding products of two binomials - Factorise quadratic expressions where the coefficient of x squared is 1, including the difference of two squares - Solve quadratic equations algebraically by factorising - Find approximate solutions using a graph - Identify and interpret roots, intercepts and turning points of quadratic functions graphically - Deduce roots algebraically - Translate simple situations or procedures into algebraic expressions or formulae	- identify properties of the faces, surfaces, edges and vertices of: cubes, cuboids, prisms, cylinders, pyramids, cones and spheres - surface area and volume of spheres, pyramids, cones and composite solids	- apply the four operations, including formal written methods, to fractions (proper and improper), and mixed numbers (all both positive and negative) - interpret fractions as operators	- use positive integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 - calculate with roots, and with integer indices - calculate with and interpret standard form A × 10n, where 1≤A<10 and n is an integer	- identify, describe and construct congruent and similar shapes, including on coordinate axes - including fractional scale factors - apply the concepts of congruence and similarity, including the relationships between lengths in similar figures	- describe translations as 2D vectors - apply addition and subtraction of vectors, multiplication of vectors by a scalar, and diagrammatic and column representations of vectors	- understand and use standard mathematical formulae - rearrange formulae to change the subject - solve two simultaneous equations in two variables (linear/linear) algebraically - derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution
Key words	Ratio, proportion, multiplicative, scale, constant, equivalent, share, direct , inverse , convert	Theorem, Hypotenuse, Square, Square Root, Formula, Sine, Cosine, Tangent, Unit, Constant of Proporortionality, Opposite, Adjacent, Rearrange,	Reciprocal, Probability, likelihood, impossible, certain, relative, frequency, theoretical, outcome, event , exhaustive , mutually exclusive , sample , bias	Ratio, proportion, multiplicative, scale, constant, equivalent, share, direct , inverse , formula , capacity , percent , interest , depreciation	plan , elevation , view , edge , vertex , face , construct , dimension	Bearing, Clockwise, Prove, Congruent, Hypotenuse, Construct, Bisector, Bisect, Equidistant, Locus, Region	Quadratic, Expand, Factorise, Solve, Graph, Power, Substitute, Variable, Roots, Turning Point, Symmetry, Intercept, Parabola, , Scale, Solution	face , surface , edge , vertex , volume , area , dimension , radius , formula , substitute , prism , pyramid , cross section	proper , improper , mixed number , numerator , denominator , recipriocal , simplify , sum , product	index , power , root , square , cube , simplify , evaluate , standard form , place value , ordinary number	congruent , similar , ratio , proportion , scale factor , coordinate , construct	vector , scalar , parallel , translation , magnitude , direction	simultaneous , solve , substitute , unknown , intersection , formula , rearrange , factorise , variable
Assessment Methods	Ratio & Proportion AQA Topic Test	Trigonometry AQA Topic Test	Probability AQA Topic Test				Quadratics AQA Topic Test						
	All content to be regularly revisited and assessed in starters and retrieval based homeworks.												