Upper School Curriculum Map : Mathematics 2022-25

Higher tier only material appears **bold**

	YEAR 9	YEAR 10	YEAR 11

NUMBER	**Basic Number** Solving real-life problems Multiplication and division with decimals Approximation of calculation Multiples, factors, prime numbers, powers and roots Prime factors, LCM and HCF Negative numbers **Fractions, Ratio and Proportion** One quantity as a fraction of another Adding, subtracting and calculating with fractions Multiplying and dividing fractions Fractions on a calculator Increasing and decreasing quantities by a percentage Expressing one quantity as a percentage of another **Ratio and proportion** Ratio Direct proportion problems Best buys Compound measures Compound interest and repeated percentage change Reverse percentage (working out the original amount)	**Powers and standard form** Powers (indices) Rules for multiplying and dividing powers Standard form **Counting, accuracy, powers and surds** Rational numbers, reciprocals, terminating and recurring decimals Estimating powers and roots Negative and fractional powers **Surds** **Limits of accuracy** Choice and outcomes	

ALGEBRA	**Number and sequences** Patterns in number Number sequences Finding the *n*th term of a linear sequence Special sequences General rules from given patterns **The *n*th term of a quadratic sequence** **Finding the *n*th term for quadratic sequences** **Algebraic manipulation** Basic algebra Factorisation Quadratic expansion Expanding squares More than two binomials Quadratic factorisation Factorising $ax^2 + bx + c$ Changing the subject of a formula	**Linear graphs** Drawing linear graphs from points Gradient of a line Drawing graphs by gradient-intercept method and cover-up methods Finding the equation of a line from its graph Real-life uses of graphs Solving simultaneous equations using graphs **Parallel and perpendicular lines** **Equations and inequalities** Linear equations Elimination method for simultaneous equations Substitution method for simultaneous equations Balancing coefficients to solve simultaneous equations Using simultaneous equations to solve problems Linear inequalities Graphical inequalities **Quadratic equations** Plotting quadratic graphs Solving quadratic equations by factorization **Solving a quadratic equation by using the quadratic formula** **Solving quadratic equations by completing the square** **The significant points of a quadratic curve** **Solving one linear and one non-linear equation using graphs** **Solving quadratic equations by the method of intersection**	**Variation** **Direct proportion** **Inverse proportion** **Graphs** Distance-time graphs **Velocity-time graphs** **Estimating the area under a curve** **Rates of change** **Equation of a circle** **Other graphs** **Transformations of the graph y = *f(x)*** **Algebraic fractions and functions** Algebraic fractions Changing the subject of a formula **Functions** **Composite functions** **Iteration**

		Solving linear and non-linear simultaneous equations algebraically **Quadratic inequalities**	

SHAPE, SPACE AND MEASURES	**Angles** Angle facts Triangles Angles in a polygon Regular polygons Angles in parallel lines Special quadrilaterals Scale drawings and bearings **Transformations, constructions and loci** Congruent triangles Rotational symmetry Transformations **Combinations of transformations** Bisectors Defining a locus Loci problems Plans and elevations **Length, area and volume** Circumference and area of a circle Area of a parallelogram Area of a trapezium Sectors Volume of a prism Cylinders Volume of a pyramid Cones Spheres	**Right-angled triangles** Pythagoras' theorem Finding the length of a shorter side Applying Pythagoras' theorem in real-life situations# Pythagoras' theorem and isosceles triangles **Pythagoras' theorem in three dimensions** Trigonometric ratios Calculating angles Using the sine and cosine functions Using the tangent function Which ratio to use Solving problems using trigonometry Trigonometry and bearings Trigonometry and isosceles triangles **Similarity** Similar triangles **Areas and volumes of similar shapes**	**Properties of circles** **Circle theorems** **Cyclic quadrilaterals** **Tangents and chords** **Alternate segment theorem** **Triangles** Further 2D problems **Further 3D problems** Trigonometric ratios of angles between 0° and 360° **Solving any triangle** **Using sine to calculate the area of a triangle** **Vector geometry** Properties of vectors **Vectors in geometry**

STATISTICS	**Statistical diagrams and averages** Statistical representation Statistical measures Scatter diagrams	**Sampling and more complex diagrams** Sampling data Frequency polygons Cumulative frequency graphs Box plots Histograms	
PROBABILITY		**Exploring and applying probability** Experimental probability Mutually exclusive and exhaustive outcomes Expectation Probability and two-way tables **Probability and Venn diagrams**	**Combined events** Addition rules for outcomes of events Combined events Frequency trees Tree diagrams Independent events Conditional probability