KNOWLEDGE AND SKILLS OVERVIEW

	HT1	HT2	HT3	HT4	HT5	HT6	Cultural Capitol	Oracy/Literacy/Reading
Year 7	**Algebraic thinking** **Sequences** **Algebraic notations** *Simplifying, Substituting*	**Place value and proportion** **Integers and decimals** *Ordering, Median ,Range, Rounding* **Fraction, decimals and percentage equivalence**	**Application of Number** **Problem solving with multiplication and division**	**Directed Number** **Four operations** **Fractional Thinking** **Addition and subtraction of fractions**	**Lines and Angles** **Constructing, measuring, using and reasoning with geometric notation.**	**Reasoning with Number** **Number sense** *Mental maths, Simplyfing using common factors* **Sets and probability** **Prime numbers and proof**	NSPCC Number Day World Pi Day Liverpool Maths Party Day UKMT Challenge competitions Links to real life context throughout teaching, for example in the topic of percentage	Verbal reasoning in lessons. Key vocabulary identified via ticksheets Maths library of numeracy related fictions.
Year 8	**Proportional Reasoning** **Ratio & Scale** **Multiplicative Change** *Conversion graphs, currency conversions, Scale factors* **Multiplying and Dividing Fractions**	**Representations** **Working on the Cartesian Plane** *Plotting straight lines, link to direct proportion and sequences* **Representing Data** *Scatter graphs, grouped and ungrouped frequency tables* **Tables & Probability** *Two-way tables, Venn diagrams*	**Algebraic Techniques** **Brackets, Equations and Inequalities** **Sequences** **Indices** *Laws of indices*	**Algebraic Techniques** **Fractions & Percentages** **Standard index From** **Number Sense** *Estimation, Money, Metric units for weight, length, area and volume*	**Developing Geometry** **Angles in Parallel Lines & Polygons** **Area of Trapezia & Circles**	**Reasoning with Data** **Line symmetry & reflection** **The data handling cycle** **Measures of Location** *Averages from tables*	NSPCC Number Day World Pi Day – students studying circle at the time Liverpool Maths Party Day UKMT Challenge competitions Links to real life context throughout teaching, for example with ratio, proportion and recipes.	Verbal reasoning in lessons. Key vocabulary identified via ticksheets Maths library of numeracy related fictions.
Year 9	**Reasoning with Algebra** **Straight Line Graphs** *Comparing gradients, Finding equations of a line, Parallel and Perpendicular lines* **Forming & Solving Equations** **Testing Conjectures** *Deciding True or False, Show That problems, Expanding binomials and polynomials*	**Constructing in 2D & 3D Shapes** **3D Shapes** *Surface area and volume of 3D shapes* **Constructions & Congruency**	**Reasoning with Number** **Numbers** *Problem solving fractions and integers, Standard Form* **Using Percentages** **Maths & Money** *Compound and Simple interest, VAT, exchange rates*	**Reasoning with Geometry** **Deduction** *Solving angles problems and conjectures* **Rotation & Translation** **Pythagoras' Theorem**	**Reasoning with Proportion** **Enlargement & Similarity** **Solving ratio & proportion Problems** *Interpreting conversion graphs, Best Buy problems, Ratio and algebra problems* **Rates** *Speed, distance & time formulae and graphs*	**Representations** **Probabability** *Calculating probability events, Probability Tree Diagrams* **Algebraic Representation** *Quadratic and reciprocal graphs, Graphing simultaneous equations, representing inequalities*	Visit from bank – Barclays Talk from Maths inspiration (probability) Liverpool Maths Party Day UKMT Challenge competitions Links to real life context throughout teaching, for example statistics and interpreting data.	Verbal reasoning in lessons. Key vocabulary identified via ticksheets Maths library of numeracy related fictions. Open evening helpers; lead maths activities.
Year 10	**Module 1: Number** Accuracy, indices, surds and standard form	**Module 2: FDP and RoC** Fractions, decimal, percentages calculations, ratio, equations and formula	**Module 3: Polygons** Sequences, polygons and angles	**Module 4: Data** Pythagoras Representing and summarising data	**Module 5: Graphs and probability** Coordinates and linear graphs, probability, compound measure	**Module 6: Shape, space and measure** Perimeter, circumference and area, bearings, trigonometry	Maths Feast days Liverpool Maths Party Day UKMT Challenge competitions Bletchley Park visit Links to real life context throughout teaching, for example in the topic of number with bounds.	Verbal reasoning in lessons. Key vocabulary identified via ticksheets UKMT Challenge competitions Maths KS4/5 library
Year 11	**Module 7: Algebra, proportion and trigonometry** Growth and decay, functions, algebraic fractions, iteration, circle theorems, non-right angled trigonometry	**Module 8: Quadratics, equations and loci** Simultaneous equations, congruency and similarity	**Module 9: Graphs and volume** Length, area and volume scale factors Graphs and transformations Vectors	**Module 10: Proof and graphs** Area under a curve and gradient, equation of a circle and tangent	**Summer examination preparation**	*GCSE Examination support*	UKMT Challenge competitions Liverpool University Lectures Bletchley Park visit Links to real life context throughout teaching, for example in the topic of graphs making links with Science and Geography.	Verbal reasoning in lessons. Key vocabulary identified via ticksheets Maths KS4/5 library

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Year 12	Pure Algebra 1	Pure Trigonometry	Pure Calculus	Pure Algebra 2	Statistics and Mechanics 1	Statistics and Mechanics 1	UKMT Senior Challenge competitions Liverpool University Lectures Link within and between topics made such as from GCSE and beyond to degree level.	Verbal reasoning in lessons. Maths KS4/5 library
Year 13	Pure Algebra 3	Pure Further Trigonometry	Pure Differentiation	Pure Integration	Statistics and Mechanics 2	Statistics and Mechanics 2	UKMT Senior Challenge competitions Liverpool University Lectures Link within and between topics made such as from AS Level and beyond to degree level.	Verbal reasoning in lessons. Maths KS4/5 libary
Core Maths	Fermi Estimation & Modelling *Using assumptions and constraints to limit a broad problem and model a potential solution.* Analysis of Data *Sampling, stem & leaf, measures of average & spread, box plots, cumulative frequency and Histograms*	Personal Finance: *Tax, NI, student loans, APR, AER, VAT, exchange rates and Inflation*	Critical Analysis *How data can be misleading, how to interpret & check statements are supported by data*	Correlation & Regression *Using data to show trends in data and comparing data sets.* Normal Distribution *Modelling data using the normal distribution, standardising the normal distribution and finding probabilities*	Confidence Intervals *Use of the sample mean and confidence intervals to analyse claims made about data sets*	Exams	Cross curricular links Real life links throughout course Link to AMSP	Verbal reasoning in lessons. Key vocabulary identified via in course notes Maths KS4/5 library