

MATHEMATICS

Intent:

“Nature is written in mathematical language.”

— Galileo Galilei, Italian astronomer, physicist and engineer

“Mathematics is the poetry of logical ideas.”

— Einstein

Here at Altrincham College we aim to nurture well-rounded citizens of the future who are not only knowledgeable, happy, and resilient, but also have a strong foundation in mathematics. By fostering mathematical thinking and problem-solving skills, we aim to empower our students to make valuable contributions to the world, enabling them to approach challenges with confidence and make informed, positive life choices grounded in logical reasoning and analytical skills.

Our aims throughout the Maths journey at Altrincham College:

- KS3: To **embed a deep understanding and curiosity** about the fundamental knowledge across the five areas of Maths to create a firm foundation that can be built upon to enable them to make links across the wider whole school curriculum and in real life.
- KS4: To **develop the specific knowledge and strategies to apply to problems** ensuring that they are inspired to reach their maximum potential at GCSE and are confident using the maths needed for further education, careers and everyday life.
- KS5: To **develop the deeper Mathematical understanding** needed to thrive in further education and make positive impacts in their future workplaces.



Implementation:

At Altrincham College, our Maths curriculum is designed to build strong and embedded understanding through a Mastery approach. In Years 7 to 9, students follow a carefully planned scheme of work where each year has a key focus: Year 7 emphasises Number, Year 8 focuses on Algebra, and Year 9 develops skills in Data and Geometry. However, important topics like Ratio and Proportion are revisited regularly across all three years to strengthen learning.

To support progress, students complete a MAD (Make A Difference) review every two weeks. These short assessments cover the previous fortnight's work and help create PLCs (Personalised Learning Checklists). These checklists encourage students to reflect on their learning, identify areas for improvement, and take responsibility for their own progress.

Teaching for mastery means we want all students to develop a deep and secure understanding of maths. By the end of each Key Stage, students should feel confident in their knowledge and ready for the next stage of their learning and beyond.

We make regular use of online platforms like **MathsWatch** and **DrFrostMaths**. These resources provide video tutorials and interactive questions that students can use at home to support homework or revise/consolidate topics from class. These platforms also track progress, highlight gaps, and allow students to revisit areas where they need more practice.

In Years 10 and 11, students study for their AQA GCSE in Maths, following either the **Higher tier** (grades 4–9) or **Foundation tier** (grades 1–5), depending on what suits them best. These decisions are based on regular assessments and ongoing conversations with students and parents, ensuring each student is given the best chance to succeed.

The GCSE course encourages students to:

- Develop fluent knowledge of maths methods and concepts.
- Apply techniques to solve a variety of problems.
- Reason and communicate mathematically.
- Interpret information through graphs, charts, and written data.

We also want students to understand how maths is used in real life, through modelling and making reasonable assumptions to solve real-world problems.

Literacy in Maths is a key focus. We help students understand and use subject-specific vocabulary such as “histogram”, “vector”, and “isosceles”. Some words in maths have different meanings than in everyday life – for example, “evaluate” or “proof” – so we take time to explain and practise using them correctly.

Teachers work together to ensure there is a shared approach to teaching maths vocabulary and language. In lessons, key terms and command words are explained clearly, and students are encouraged to use higher-level vocabulary when answering questions and improve their oracy in Maths. We also focus on helping students read and interpret diagrams, build models, and clearly communicate their thinking.

Our aim is to equip all students with the skills, confidence, and understanding to succeed in Maths – both at school and in life beyond the classroom.

Long Term Departmental Planning Overview			Subject: Mathematics				
Year	Curriculum Title	HT1 topics	HT2 topics	HT3 topics	HT4 topics	HT5 topics	HT6 topics
7	<p>Number</p> <p>Ratio and proportion</p>	<p><u>Understanding Numbers</u> Ordering and place value. Calculating with fractions. Rounding and estimating. Negative numbers.</p> <p><u>Retrieval focus in remember more starters</u> Numeracy: Times tables rapid recall</p>	<p><u>Multiply and Divide</u> Integers. By 10,100 and 1000. Decimals. Negatives. Fractions. Simplify fractions.</p> <p><u>Retrieval focus in remember more starters</u> HT1: Significant figures and estimating Numeracy: Telling, converting and working with time</p>	<p><u>Add and Subtract</u> Integers. Decimals. Negatives. Fractions. Collect like terms. Term-to-term sequences. Perimeters. Angles sum.</p> <p><u>Retrieval focus in remember more starters</u> HT1: Significant figures and estimating HT2: Multiply and divide negatives and fractions Numeracy: Times tables rapid recall</p>	<p><u>Operations and special numbers</u> Order of operations. Multiples and Factors. Primes. Powers and roots. Standard form.</p> <p><u>Retrieval focus in remember more starters</u> HT2: Multiply and divide negatives and fractions HT3: Add and subtract negatives, fractions and like terms Numeracy: Telling, converting and working with time</p>	<p><u>Fractions</u> Order fractions Fractions of amount. Problem solving <u>Percentages</u> Percentage of amount. Percentage change. Reverse percentages. Financial problems. Fraction, Decimal and percentage conversion</p> <p><u>Retrieval focus in remember more starters</u> HT1: Significant figures and estimating HT3: Add and subtract negatives, fractions and like terms HT4: Writing in standard form Order of operations with negatives</p>	<p><u>Ratio and Proportion</u> Compound measures. Use and convert metric measures. Scale factors and maps. Simplify and divide by a ratio. Proportion problem solving eg; conversion, scaling, mixing etc</p> <p><u>Retrieval focus in remember more starters</u> HT2: Multiply and divide negatives and fractions HT4: Writing in standard form Order of operations with negatives HT5: fraction and percentage problem solving</p>

<p>Algebra</p> <p>Ratio and proportion</p> <p>Numeracy revision</p>	<p><u>Numeracy revision</u> Multiply integers and decimals. 4 operations negative numbers. HCF and LCM <u>Expressions, formulae and identities</u> Identify different types of algebra. Collect like terms. Expand and factorise brackets. Expand binomials. Index laws</p> <p><u>Retrieval focus in remember more starters</u> Y7 HT1: Significant figures and estimating Y7 HT5: fraction and percentage problem solving</p>	<p><u>Numeracy revision</u> Prime factorisation. Compound measures. <u>Sequences</u> Mapping. Nth rule. Special sequences. Recognise quadratic sequences. Inverse and composite functions.</p> <p><u>Substitution</u> Substitute into expressions. Pythagoras theorem.</p> <p><u>Retrieval focus in remember more starters</u> HT1: 4 operations of negative numbers Y7 HT2: Multiply and divide fractions Y7 HT6: Ratio problem solving</p>	<p><u>Solve</u> Solve linear equations with x on one side and on both sides, Construct and solve equations in problems. Change the subject of a formula. Solve quadratic equations with factorising and the quadratic formula.</p> <p><u>Retrieval focus in remember more starters</u> HT1: 4 operations of negative numbers HT2: linear sequences Y7 HT3: Add and subtract fractions and like terms</p>	<p><u>Ratio and proportion</u> Simplify and divide by a ratio. Ratio to fractions and linear functions. Proportion problem solving eg; conversion, scaling, mixing etc <u>Percentages</u> Percentage of amount. Percentage change. Reverse percentages. Financial problems.</p> <p><u>Retrieval focus in remember more starters</u> HT2: linear sequences HT3: solve linear equations Y7 HT4: Writing in standard form</p>	<p><u>Coordinates and Graphs</u> Plot coordinates in all 4 quadrants. Plot straight line graphs. Understand gradients and intercepts including parallel and perpendicular lines. Interpret simple real life graphs Plot quadratic graphs and use to solve and find turning point. Interpret real-life graphs. Including distance, speed and acceleration.</p> <p><u>Retrieval focus in remember more starters</u> HT1: 4 operations of negative numbers HT3: solve linear equations HT4: percentage problem solving Y7 HT5: fraction and problem solving</p>	<p><u>Inequalities</u> Understand what an inequality is. Plot on a number line. Solve an inequality equation. Algebraic proof</p> <p><u>Retrieval focus in remember more starters</u> HT2: linear sequences HT4: percentage problem solving HT5: gradients and intercepts. Y7 HT6: Ratio problem solving</p>
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<p>Statistics</p> <p>Geometry</p> <p>Ratio and proportion</p> <p>Numeracy revision</p>	<p><u>Numeracy revision</u> Multiply integers and decimals. Round to significant figures.</p> <p><u>Percentages</u> Percentage of amount. Percentage change. Reverse percentages. Financial problems.</p> <p><u>Statistics</u> Collecting data and sampling. Types of data Averages including from a table. Quartiles and interquartile range.</p> <p><u>Retrieval focus in remember more starters</u> Y7 HT1: Significant figures and estimating Y8 HT1: 4 operations of negative numbers Simplify surds</p>	<p><u>Draw and analysis tables, charts and graphs</u> Two way tables. Pictograms. Line graphs. Bar charts, including comparative and composite. Pie charts. Time series. Scatter graphs. Cumulative frequency. Histograms. Box plots.</p> <p><u>Retrieval focus in remember more starters</u> Y7 HT2: Multiply and divide fractions Y8 HT2: linear sequences HT1: Percentage problem solving and averages. Quartiles</p>	<p><u>Numeracy revision</u> Multiply integers, decimals and fractions.</p> <p><u>Theoretical probability</u> Use correct probability terms. Use the probability scale 0-1. Understand mutually exclusive events equal 1.</p> <p><u>Experimental probability</u> Record frequency of outcomes. Analysis probability of experiments using tables and frequency trees. Calculate expected outcomes.</p> <p><u>Sets and diagrams</u> Use tables, grids and Venn diagrams to organise data. Sample space diagrams. Tree diagrams of independent combined events.</p>	<p><u>Angles</u> Sum at a point, straight line, triangle and quadrilateral. Angles in parallel lines. Interior and exterior angles in a regular polygon. Sum of interior angles.</p> <p><u>Geometry</u> Geometrical terms. Draw and describe 2d shapes, using the correct property descriptions and notation. As well as parts of a circle. Co-ordinates problem solving. Properties of 3d shapes including nets. Plans and elevations. Pythagoras. Construction and loci. Congruency and similarity.</p>	<p><u>Numeracy revision</u> 4 operations of integers, decimals and fractions/ <u>Algebra-expressions</u> Substitute Collect like terms</p> <p><u>Area and perimeter</u> 2 d shapes. Compound shapes. Circles. Surface area and volume of a cuboid. Length of arcs. Areas of sectors Surface area and volume of prisms, pyramids, spheres and cylinders. Including problem solving.</p> <p><u>Retrieval focus in remember more starters</u> Y7 HT5: fraction and problem solving Y8 HT5: gradients and intercepts. HT1: Percentage problem solving and averages</p>	<p><u>Transformations</u> Describe transformations. Vector calculations diagrammatic and column representations. Bearings</p> <p><u>Retrieval focus in remember more starters</u> Y7 HT6: Ratio problem solving Y8 HT6: solve inequalities and on a number line HT2: Pie charts Histograms HT4: Pythagoras Similarity HT5: Areas of circles Parts of a circle</p>
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				<p>Use tree diagrams, two way tables and Venn diagrams independent and dependent events as well as conditional probabilities.</p> <p><u>Retrieval focus in remember more starters</u> Y7 HT3: Add and subtract fractions and like terms Y8 HT3: solve linear equations HT1: Percentage problem solving and averages. Quartiles HT2: Pie charts histograms</p>	<p>Algebra- solve Construct and solve linear equations. Construct and solve with an unknown of both sides.</p> <p><u>Retrieval focus in remember more starters</u> HT2: linear Y7 HT4: Writing in standard form Y8 HT4: percentage problem solving HT2: Pie charts histograms HT3: probability expected outcomes Calculating probability from trees and venn diagrams</p>	<p>Quartiles HT3: probability expected outcomes Calculating probability from trees and venn diagrams HT4:Pythagoras Similarity</p>	
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<p>10 – Foundation tier</p>	<p>AQA syllabus which is sequenced to reflect the strong and consistent approach of the KS3 scheme of learning.</p> <p><i>Numeracy fluency</i></p> <p><i>Generalisation of algebra</i></p> <p><i>Application to statistical analysis and geometric understanding.</i></p> <p><i>Feedback analysis with tailored learning and development towards GCSEs</i></p> <p><i>Throughout all areas, where appropriate, real life context and links to careers are addressed to ensure all students experience Maths beyond the classroom.</i></p>	<p>Number</p> <p>Ordering and place value.</p> <p>Rounding and estimating.</p> <p>4 operations including negative numbers.</p> <p>Calculations and problem solving with fractions and decimals.</p> <p>Order and inverse operations.</p> <p>Factors, multiples and primes, including HCF, LCM and prime factorisation.</p> <p>Powers and roots.</p> <p>Standard form</p> <p>Retrieval focus during starters and homework's</p> <p>HCF/LCM and Prime Factorisation (Y7 HT4)</p> <p>Negative Number Operations (Y7 HT1-HT3)</p> <p>Fractions of Amounts (Y7 HT5)</p>	<p>Algebra – Expressions and simplify</p> <p>Identify different types of algebra and express in words and vice versa.</p> <p>Collect like terms.</p> <p>Expand and factorise brackets.</p> <p>Index laws</p> <p>Substitution.</p> <p>Algebra – solving</p> <p>Solve Linear equations</p> <p>Construct algebraic arguments.</p> <p>Solve inequalities.</p> <p>Represent an inequality on a number line.</p> <p>Co-ordinates and Linear graphs</p> <p>Plot straight line graphs.</p> <p>Understand gradients and intercepts including parallel and perpendicular lines.</p> <p>Retrieval focus during starters and homework's</p>	<p>Algebra – sequences</p> <p>Nth rule.</p> <p>Special sequences.</p> <p>Percentages</p> <p>Percentage of amount.</p> <p>Percentage change.</p> <p>Reverse percentages.</p> <p>Financial problems.</p> <p>Compare fractions, decimals and percentages.</p> <p>Growth and decay</p> <p>Retrieval focus during starters and homework's</p> <p>Solving 1-Step Equations (Y9 HT4)</p> <p>Simplifying Ratios (Y8 HT4)</p> <p>Area of rectangles and shapes made from rectangles</p> <p>Shapes (Y9 HT5)</p>	<p>Ratio and Proportion</p> <p>Use and convert metric measures.</p> <p>Scale factors and maps. Including length, area and volume.</p> <p>Compound measures.</p> <p>Simplify and divide by a ratio.</p> <p>Ratio to fractions and linear functions.</p> <p>Proportion problem solving eg; conversion, scaling, mixing etc</p> <p>Mapping</p> <p>Geometry</p> <p>Perimeter and area of 2d shapes including a circle and parts of a circle.</p> <p>Surface area.</p> <p>Retrieval focus during starters and homework's</p> <p>Standard Form (Y7 HT4)</p> <p>Reverse Percentages (Y8 HT4)</p>	<p>Angles</p> <p>Sum at a point, straight line, triangle and quadrilateral.</p> <p>Angles in parallel lines.</p> <p>Interior and exterior angles in a regular polygon.</p> <p>Sum of interior angles.</p> <p>Bearings</p> <p>Theoretical probability</p> <p>Use correct probability terms.</p> <p>Use the probability scale 0-1.</p> <p>Understand mutually exclusive events equal 1.</p> <p>Experimental probability</p> <p>Record frequency of outcomes.</p> <p>Analysis probability of experiments using tables and frequency trees.</p> <p>Calculate expected outcomes.</p> <p>Sets and diagrams</p> <p>Use tables, grids and Venn</p>	<p>Mock Exam – revision and question analysis</p> <p>Geometry</p> <p>Pythagoras.</p> <p>Trigonometry in right angle triangles.</p> <p>Retrieval focus during starters and homework's</p> <p>Venn Diagrams and Probability (Y9 HT3)</p> <p>Metric Conversion (Y7 HT6)</p> <p>Decimal Calculations (4 Ops) (Y7 HT1-3)</p>
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Collecting Like Terms
(Y8 HT1)
Coordinates in Four Quadrants
(Y8 HT5)
Expanding Single Brackets
(Y8 HT1)

Substitution into Expressions
(Y8 HT2)

diagrams to organise data.
Sample space diagrams.
Use tree diagrams, two way tables and Venn diagrams from independent and dependent events as well as conditional probabilities.

Retrieval focus during starters and homework's

Angles in Parallel Lines
(Y9 HT6)
Pie Charts
(Y9 HT2)
Surface Area of 3D Shapes
(Y9 HT5)

<p>10 – Higher tier</p>		<p><u>Number</u> Ordering and 4 operations of fractions. Rounding and estimating. Bounds and error intervals. Product rule for counting. 4 operations including negative numbers. Calculations and problem solving with fractions and decimals. Converting recurring decimals. Order and inverse operations. Factors, multiples and primes, including HCF, LCM and prime factorisation. Powers and roots. Fractional indices. Standard form.</p> <p><u>Number</u> Simplify surds and rationalise the denominator.</p> <p><u>Retrieval focus during starters and homework's</u></p>	<p><u>Algebra – types, simplify</u> Identify different types of algebra. Collect like terms. Expand and factorise brackets. Index laws Substitution.</p> <p><u>Algebra - Expressions</u> Expand and factorise binomials.</p> <p><u>Algebra – expressions, graphs, solving and inequalities</u> Change the subject. Construct and solve linear equations</p> <p><u>Algebra – linear Relationships</u> Plot straight line graphs. Understand gradients and intercepts including parallel and perpendicular lines.</p>	<p><u>Percentages</u> Percentage of amount. Percentage change. Reverse percentages. Financial problems. Compare fractions, decimals and percentages.</p> <p><u>Proportion</u> Interpret growth and decay.</p> <p><u>Ratio and Proportion</u> Simplify and divide by a ratio. Ratio to fractions and linear functions. Proportion problem solving eg; conversion, scaling, mixing etc Direct and inverse proportion.</p> <p><u>Retrieval focus during starters and homework's</u> Proportional problems (Y8 HT5)</p>	<p><u>Ratio and Proportion</u> Direct and inverse proportion.</p> <p><u>Geometry</u> Perimeter and area of 2d shapes including circles and parts of a circle as well as composite shapes. Surface area</p> <p><u>Retrieval focus during starters and homework's</u> Parts of a Circle (Y9 HT4) Gradients and Intercepts (Y8 HT5) Linear Factorising (Y8 HT1)</p>	<p><u>Geometry</u> Sum at a point, straight line, triangle and quadrilateral. Angles in parallel lines. Interior and exterior angles in a regular polygon. Sum of interior angles.</p> <p><u>Geometry – circles</u> Understand parts of a circle. Use and Proof of Circle theorems.</p> <p><u>Solving</u> Solve quadratics.</p> <p><u>Retrieval focus during starters and homework's</u> Angles in Polygons (Y9 HT6) Ratio to Linear Relationships (Y8 HT4) Change the subject (Y10 HT2)</p>	<p><u>Algebra</u> Simplify algebraic fractions. Quadratic graphs, Simultaneous and inequality quadratics</p> <p><u>Geometry</u> Pythagoras. Trigonometry of right angled triangles. 2D and 3D Know the exact values of sin, cos and tan.</p> <p><u>Retrieval focus during starters and homework's</u> Sketch linear graphs (Y8 HT4) Volume of 3D Shapes (Y9 HT5) Simplifying Surds (Y10 HT1)</p>
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		<p>HCF, LCM and Prime Factorisation (Y7 HT4)</p> <p>Bounds and Error Intervals (Y9 HT1)</p> <p>Negative Number Operations (Y7 HT1-3)</p>	<p>Algebra</p> <p>Construct and solve linear inequalities.</p> <p>Represent an inequality on a number line.</p> <p>Solve inequalities with 2 variables including set notation and on a graph.</p> <p>Solve inequalities. Represent an inequality on a number line, using set notation and on a graph.</p> <p>Algebra sequences</p> <p>Linear Sequences</p> <p>Quadratic & Geometric Sequences</p> <p>Algebra – Solving</p> <p>Solve simultaneous equations algebraically</p> <p>Retrieval focus during starters and homework's</p> <p>Sequences – Linear & Patterns (Y8 HT2)</p>	<p>Growth and Decay (Y8 HT1)</p> <p>Expanding Binomials (Y9 HT4)</p>			
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			Rearranging Formulae (Y8 HT3) Solving linear equations and Inequalities (Y9 HT4)				
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<p>11 – Foundation tier</p>		<p><u>Construction and Loci</u></p> <p><u>Ratio and proportion</u> Use and convert metric measures. Compound measures. Scale factors and maps. Including length, area and volume.</p> <p><u>Graphs</u> Real life graphs including conversion graphs and kinematic graphs</p> <p><u>Geometry</u> <u>Shape properties</u> Properties of 3d shapes including nets. Plans and elevations.</p> <p><u>Geometry</u> Volume.</p> <p><u>Retrieval focus during starters and homework's</u> Ratio sharing (Y8 HT4)</p>	<p><u>Mock Exam – revision and question analysis</u></p> <p><u>Geometry</u> Congruency proof</p> <p><u>Algebra</u> Change the subject</p> <p><u>Quadratic equations</u> Expand and factorise binomials, including the difference of two squares.</p> <p><u>Retrieval focus during starters and homework's</u> Area of rectangles and shapes made from rectangles (Y9 HT5) Reverse percentages (Y8 HT4) Substitution into expressions, including negatives and fractions. (Y8 HT2)</p>	<p><u>Sequences and graphs</u> Recognise quadratic, geometric and recursive sequences. Recognise, sketch and interpret quadratic, cubic, and reciprocal graphs</p> <p><u>Solve simulations equations</u></p> <p><u>Statistics</u> Types of data, collecting data and sampling. Draw and analysis tables, charts and graphs Two way tables. Pictograms. Line graphs. Bar charts, including comparative and composite. Pie charts. Time series. Scatter graphs.</p> <p><u>Retrieval focus during starters and homework's</u></p>	<p><u>Statistics</u> Scatter graphs. Find and compare averages including from a table.</p> <p><u>Geometry</u> Transformations and vectors (column and geometry)</p> <p><u>Proportion and rates of change</u> Equivalent proportion equations and interpret gradients on straight line graphs.</p> <p><u>Proportion</u> Direct and inverse proportion</p> <p><u>Retrieval focus during starters and homework's</u> Pie charts (Y9 HT2) Surface area (Y9 HT5) Bearings (Y9 HT6)</p>	<p>Revision and preparation for GCSE</p>	<p>Revision and preparation for GCSE</p>
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		Fractions of amounts (Y7 HT5) Angles in parallel lines (Y9 HT6)		Coordinates in 4 quadrants, plotting linear graphs (Y8 HT5) Expand brackets (Y8 HT1) Simplify expressions (Y8 HT1)			
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<p>11- Higher tier</p>		<p><u>Geometry</u> Sine rule. Cosine rule. $\frac{1}{2}$ absinc.</p> <p><u>Geometry</u> Constructions. Loci.</p> <p><u>Ratio and Proportion</u> Scale factors and maps. Including length, area and volume. Compound measures.</p> <p><u>Algebra – graphs</u> Draw and interpret real life graphs. Include velocity and acceleration.</p> <p><u>Proportion and rates of change</u> Interpret gradients and curves as a rate of change and proportional relationship.</p> <p><u>Retrieval focus during starters and homework's</u> Factorising binomials (Y9 HT4)</p>	<p><u>Algebra</u> Equation of circles & their tangents.</p> <p><u>Graphs</u> Recognise, sketch and interpret linear, quadratic, cubic, reciprocal, and exponential graphs.</p> <p><u>Mock Exam – revision and question analysis</u></p> <p><u>Geometry</u> Congruency and properties of 2d shapes. Volume</p> <p><u>Retrieval focus during starters and homework's</u> Growth & decay (Y8 HT1) Angles in polygons (Y9 HT6) Linear sequences (Y8 HT2)</p>	<p><u>Solving</u> Iterative process.</p> <p><u>Statistics</u> Pie charts. Time series. Histograms. Calculate and compare averages including from a table. Quartiles and interquartile range. Box plots and cumulative frequency. Scatter graphs.</p> <p><u>Retrieval focus during starters and homework's</u> Trig in right-angled triangles (Y9 HT6) Volume of 3D shapes (Y9 HT5) Sketching linear graphs (Y8 HT5)</p>	<p><u>Geometry – transformations</u> Draw and describe single and connected transformations including negative and fractional enlargements.</p> <p><u>Geometry - vectors</u> Calculate vectors and Scalar products of vectors. Including proofs.</p> <p><u>Algebra</u> Inverse and composite functions. Sketch and transform trigonometry and quadratic functions.</p> <p><u>Theoretical probability</u> Use correct probability terms. Use the probability scale 0-1. Understand mutually exclusive events equal 1.</p> <p><u>Experimental probability</u> Record frequency of outcomes. Analysis probability of experiments using tables and frequency trees.</p>	<p>Revision and preparation for GCSE</p>	<p>Revision and preparation for GCSE</p>
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		<p>Surds (Y10 HT1)</p> <p>Bounds & error intervals (Y9 HT1)</p>			<p>Calculate expected outcomes.</p> <p><u>Sets and diagrams</u> Use tables, grids and Venn diagrams to organise data. Sample space diagrams. Use tree diagrams, two way tables and Venn diagrams from independent and dependent events as well as conditional probabilities.</p> <p><u>Retrieval focus during starters and homework's</u> Parts of a circle + circle theorems (Y9 HT4 + y10 HT5) Rearranging formulae (Y8 HT3) Ratio to linear (Y8 HT4)</p>		
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Y12 – Core maths	AQA level 3 certificate maths qualification <i>that helps students develop their statistical analysis, financial literacy and problem-solving skills</i>	Paper 1 Statistics: Representations and comparisons of data using various methods	Paper 1 Finance: Tax, National Insurance, Student Loans, Mortgages, Inflation, AER, APR, Exchange Rates Fermi Estimation	Paper 2B Critical analysis of data & models Critical path analysis: project modelling, identifying longest paths and project scheduling.	Paper 2B Expectation: calculating expected values in probabilistic scenarios. Cost–benefit and risk analysis: decision-making using expected values, weighing costs, benefits, and managing risk.	Revision and Examination	
Y12 – A-level	Edexcel A-level qualification <i>that develops problem-solving, analytical Skills research Skills and logical thinking covering Pure Mathematics, mechanics and statistics modules.</i>	Pure Algebra and Functions Coordinate Geometry Polynomials Trigonometry <u>Retrieval focus during starters and homework’s</u> GCSE: Algebraic expressions, quadratics, inequalities HT1: Surds and indices, quadratics, inequalities, simultaneous equations, straight lines	Pure Proof Binomial expansion Vectors Trigonometry Differentiation <u>Retrieval focus during starters and homework’s</u> HT1: Algebra and functions, coordinate geometry HT2: Algebraic methods, binomial expansion, trigonometry	Pure Vectors Exponentials and Logarithms Differentiation Integration <u>Retrieval focus during starters and homework’s</u> HT1: Inequalities, graphs and transformations, coordinate geometry, quadratics HT2: Algebraic methods, binomial expansion, trigonometry HT3: Vectors, differentiation	Mechanics Modelling Kinematics – Constant Acceleration Forces and Newton’s law Statistics Sampling Location and Spread Representations of data Correlation Probability and discrete random variables Hypothesis testing <u>Retrieval focus during starters and homework’s</u> HT1: Quadratics, coordinate	Mechanics Forces and Newton’s law Variable acceleration Statistics Probability Statistical Distributions Hypothesis Testing <u>Retrieval focus during starters and homework’s</u> HT1: Quadratics, simultaneous equations, coordinate geometry, graphs and transformations HT2: Trigonometry, algebraic methods	Revision and EOY Exams Pure Algebra and Functions Radians Trigonometric Functions <u>Retrieval focus during starters and homework’s</u> HT1: Coordinate geometry, surds and indices HT2: Trigonometry, binomial expansion HT3: Vectors HT4: Data collection, location and spread,

					<p>geometry, simultaneous equations, surds, inequalities, graphs and transformations</p> <p>HT2: Trigonometry, algebraic methods, binomial expansion</p> <p>HT3: Differentiation, integration, vectors, exponentials and logs</p> <p>HT4: Data collection, location and spread, representations of data, modelling mechanics, constant acceleration</p>	<p>HT3: Differentiation, integration, vectors, exponentials and logs</p> <p>HT4: Data collection, representations of data, correlation, location and spread, modelling using mechanics, constant acceleration</p> <p>HT5: Probability, statistical distributions, forces and motion</p>	<p>modelling mechanics, HT5: Statistical distributions, hypothesis testing, probability, forces and motion, variable acceleration</p> <p>HT6: Proof</p>
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Y13 – A-level		<p>Pure Trigonometry Parametric Equations Vectors Functions and Graphs Sequences and Series Binomial Expansion</p> <p><u>Retrieval focus during starters and homework's</u> Yr12 Autumn: Inequalities, trigonometry, graphs and transformations, Yr12 Spring: Exponentials and logs, location and spread, modelling mechanics, representations of data, constant acceleration, differentiation, correlation Yr12 Summer: Algebraic methods, radians, probability, hypothesis testing, proof, statistical distributions</p>	<p>Revision and Exams Pure Vectors Integration Binomial Expansion Differentiation</p> <p><u>Retrieval focus during starters and homework's</u> Yr12 Autumn: Binomial expansion Yr12 Spring: Integration, vectors Yr12 Summer: Forces & motion, variable acceleration HT1: Trigonometry, parametric equations, sequences and series HT2: Binomial expansion, vectors</p>	<p>Pure Differentiation Integration and differential equations Numerical Methods Mechanics Moments Statistics Regression and Hypothesis Testing</p> <p><u>Retrieval focus during starters and homework's</u> Yr12 Autumn: Quadratics Yr12 Spring: Vectors, exponentials and logs, integration, data collection, location and spread Yr12 Summer: Variable acceleration, algebraic methods, probability, statistical distributions, hypothesis testing HT1: Trigonometry, parametric equations, sequences and</p>	<p>Revision Mechanics Forces Projectiles Kinematics Statistics Probability Normal Distribution Hypothesis testing</p> <p><u>Retrieval focus during starters and homework's</u> Yr12 Autumn: Simultaneous equations, straight lines Yr12 Spring: Modelling mechanics, representations of data, correlation Yr12 Summer: Radians, proof HT1: Parametric equations, functions and graphs HT2: Binomial expansion HT3: Integration, regression, numerical methods, moments, differentiation</p>	<p>Revision and Examination</p> <p><u>Retrieval focus during starters and homework's</u> Yr12 Autumn: Algebraic expressions, circles, trigonometry Yr12 Spring: Modelling mechanics Yr12 Summer: Probability, statistical distributions HT1: Trigonometry, sequences and series HT2: Vectors, binomial expansion HT3: Regression, numerical methods, moments HT4: Conditional probability, forces and fiction, projectiles HT5: Application of forces</p>	
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		HT1: Trigonometry, functions and graphs, sequences and series		series, functions and graphs HT2: Vectors, binomial expansion HT3: Integration, differentiation, numerical methods	HT4: Forces & Friction,		
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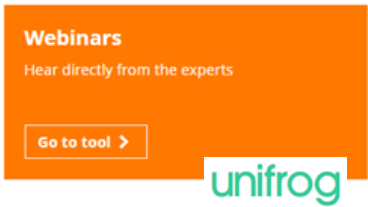
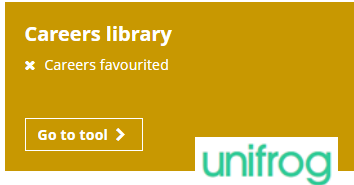
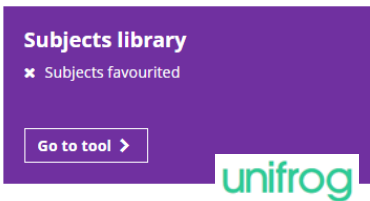

Throughout both KS5 courses students are exposed to activities and discussions to challenge their application of maths to problem solving and not just answering exam questions. They also have virtual career experiences to broaden their understanding of how Maths in the classroom can translate into future career opportunities.

British Values

Democracy	Rule of Law	Individual Liberty	Mutual Respect	Tolerance of Different Faiths & Beliefs
Allowing each other to speak and engage in class discussion and oracy time. When possible links to civic statistics (e.g. election turnout, population data, income distribution).	Follow and model the 3 R's during lesson. Explore laws of gambling when discussing fairness in games and probability. .	Freedom for individuals to learn in the lesson. Offer choice of methods for problem-solving (e.g., algebraic vs graphical approaches). Use open-ended investigations where students design their own models.	Listening to answers from peers and discussing ideas. Group work tasks emphasising respectful dialogue and valuing different strategies.	No offensive language directed at race, culture or gender. Use examples from diverse mathematicians across cultures and genders (e.g. Ramanujan, Hypatia, Maryam Mirzakhani).

Contribution to students social, moral, spiritual, cultural, personal development & wellbeing

Spiritual – Encourage awe at patterns in maths (e.g. Fibonacci, fractals, symmetry in nature).
Moral – Discuss ethical implications of statistics (e.g. how data can be misrepresented in media).
Social – Promote teamwork in collaborative problem-solving tasks; use peer teaching.
Cultural – Explore mathematical contributions from different cultures (Islamic tessellations, Mayan numeracy, Chinese remainder theorem).
Personal development -
Numeracy in Health: Use percentages/ratio to calculate nutritional values, BMI, and exercise stats. Data handling projects on sports performance, heart rate tracking, or healthy eating surveys.
Time & Planning: Real-life problem-solving: scheduling exercise routines, calculating calorie intake vs expenditure.
Financial Wellbeing: Apply percentages and interest rates to budgeting, comparing supermarket deals, cost of healthy food vs fast food.
Capital Culture –
Mathematics in the Real World: Connect maths to architecture (geometry in famous UK buildings). Explore statistics in sports (football league tables, Olympic data). Apply maths to art (proportion, symmetry, perspective).

Careers / Gatsby benchmark links				
Links to careers / jobs	Careers talk (possible contacts)	Career & labour market information	Workplace visit	Encounter with further / higher education
<p>What will your future career be?</p> <p>At age 16 you can't know exactly what you will do in the future, meaning you can't predict what maths you will need. Many people will change careers multiple times, meaning that you need to have a wide understanding of maths to give you the best possible job options.</p>   <p>Possible careers after a Maths degree:</p> <ul style="list-style-type: none"> • Acoustic consultant • Actuarial analyst • Actuary • Astronomer • Chartered accountant • Chartered certified accountant • Data analyst • Data scientist • Investment analyst • Research scientist (maths) • Secondary school teacher • Software engineer 	 <p>Subject discovery: Computer Science</p> <ul style="list-style-type: none"> • A degree in Computer Science will teach you how to design and analyse algorithms to solve problems and study the performance of computers. You could even learn about artificial intelligence while you're at it! <p>Subject discovery: Business and Management</p> <ul style="list-style-type: none"> • Do you want to play a key role within a business? Are you interested in organising and coordinating the activities of a business to achieve its goals? If so, Business Management may be right up your street! <p>Subject discovery: Engineering</p>	<p>Mathematicians and statisticians are in demand across a range of sectors and employment opportunities are commonly found in:</p> <ul style="list-style-type: none"> • education • engineering • finance, banking and accountancy firms • government - local, central and agencies • insurance companies • IT, business consultancy and operational research companies • market research and marketing companies • medicine and health - including private pharmaceutical companies and the NHS • petroleum and nuclear industries • publicly-funded research institutes • space science and astronomy. <p>After completing a Maths degree what type of work do graduates go on to do?</p>	 <p>Search by keyword or subject search:: MATHS</p> <p>Croupier</p> <ul style="list-style-type: none"> • Croupiers run the games in casinos and make sure the games take place in a fair and friendly manner. <p>Investment banker</p> <ul style="list-style-type: none"> • Investment bankers help companies to raise capital. <p>Financial adviser</p> <ul style="list-style-type: none"> • Financial advisers help people and organisations to choose investments, savings, pensions, mortgages or insurance products. <p>Actuary</p> <ul style="list-style-type: none"> • Actuaries work with companies and 	 <p>Search by keyword or subject search: MATHS</p> <p>Meet Real university student that apply their Maths skills to a variety of courses.</p> <p>Economics</p> <ul style="list-style-type: none"> • A social science that studies how individuals, governments, firms and nations make choices on allocating scarce resources. <p><i>University of Nottingham</i></p>  <p>Civil engineering</p> <ul style="list-style-type: none"> • The design, construction and maintenance the

- Sound engineer
- Statistician

Bitesize

Jobs that use Maths articles to read:

[Link](#)

- If you're seeking a future that revolves around innovation and assisting mankind in reaching new heights (literally, in the case of Aeronautical Engineering!), a degree in Engineering is the one for you.

Skills & Enterprise Week - Entrepreneurship Skills

- Have you always fancied yourself as an entrepreneur? This webinar will explore the skills and competencies you need to make it as an entrepreneur and how you can start to develop them today.

Skills & Enterprise Week - Problem Solving Skills Development

- We all know being able to solve problems is a useful skill to have, but how can you demonstrate it to employers? This webinar will give you top tips on how to showcase your problem solving skills

- Business, HR and financial 39.8%
- Information technology 20.6%
- Education professionals 12.3%
- Secretarial and numerical clerks 8.1%
- Other 19.4%

Best Paying Maths Careers:

- **Actuarial Sciences and Risk Management** €80-90,000
- **Cryptology** €85,000
- **Computer and Information Research Scientist** Six figure annual salaries are easy to get with a few years of experience
- **Financial Analysts** €70,000
- **Data Scientists or Statisticians** €250,000

government departments, to help them forecast long-term financial costs and investment risks.

Office manager

- Office managers oversee the day-to-day running of an office or department.



Meet the real people doing the jobs.

Many more jobs to explore that require Maths in their day to day duties.

infrastructures that hold our physical world together.

University of Bath



Studying a maths degree develops skills in:

- designing and conducting observational and experimental studies
- investigating, analysing and interpreting data, finding patterns and drawing conclusions
- information technology
- approaching problems in an analytical and rigorous way, formulating theories and applying them to solve problems
- dealing with abstract concepts
- presenting mathematical arguments and conclusions with accuracy and clarity
- advanced numeracy and analysing large quantities of data

	to boost your employability.			<ul style="list-style-type: none">• logical thinking.
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