



**Subject Intent Statement**

*We are very proud of the maths curriculum here at The Garibaldi School, which is both **engaging and ambitious**, and continues to build on our students prior learning from the end of Key Stage 2, and fluently through Key Stages 3 and 4, and beyond. We actively look for opportunities to make real-life links with the content being taught, so our students understand the enormity of the maths all around them in our modern lives (maths really is everywhere!!!).*

*We go over and above the statutory requirements of the National Curriculum Programmes of Study for maths in years 7 and 8, through the delivery of specific ‘problem solving’ lessons, in addition to our ‘life skills’ lessons. We think this is really crucial in making our students into well-rounded individuals and to help the development of their individual characters, which we aim to do through a range of tasks where oracy and presenting skills can be perfected, and therefore improve students’ confidence, which can be transferred to life after education into the world of work, further education, and into the local community.*

*As well as working with other students through the variety of different tasks carried out in maths, we would also encourage our students to practise working independently, to help improve their **self-motivation and resilience**.*

*Finally, the maths team here at Garibaldi really care about our students, and want them to achieve to their full potential, and through their careful planning for their individual classes and students, and through continual **reflection** of their individual practice, our dedicated team work together to ensure high-quality lessons are delivered, every lesson. Ultimately, the team are relentless in their pursuit to provide every student with an **exceptional learning experience**.*

**Key Concepts\***

**Key Language/Terminology\*\***

Key Stage 3	Key Stage 4	Key Stage 5	Key Stage 3	Key Stage 4	Key Stage 5
<p>Key stage 3 focusses on the understanding and reasoning of the following key concepts, whilst developing fluency in preparation for Key Stage 4.</p> <ul style="list-style-type: none"> <li>• Number reasoning</li> <li>• Fractional thinking</li> <li>• Percentages</li> <li>• 2D Geometrical reasoning</li> <li>• Understanding and developing data</li> <li>• Algebraic fluency</li> <li>• Interpreting and using graphs</li> <li>• Ratio and compound units</li> <li>• Understanding data</li> <li>• Trigonometry and Pythagoras</li> <li>• Constructions</li> <li>• Understanding transformations</li> <li>• Probability</li> </ul>	<p>Key stage 4 focusses on developing, extending and applying Key Stage 3 concepts, as well as transferring knowledge and making connections to a range of applications in readiness for KS5 and potential future careers.</p> <ul style="list-style-type: none"> <li>• Applications of Number</li> <li>• Fractional and percentage fluency</li> <li>• Analysis and application of data</li> <li>• Algebraic applications</li> <li>• Geometrical applications</li> <li>• Probability and Statistical analysis</li> <li>• Trigonometrical applications</li> <li>• Applying constructions</li> <li>• Ratio, proportion and their applications</li> <li>• Use of transformations</li> <li>• Probability reasoning</li> </ul>	<ul style="list-style-type: none"> <li>• Proof</li> <li>• Algebra and functions</li> <li>• Coordinate geometry in the (x,y) plane</li> <li>• Sequences and series</li> <li>• Trigonometry</li> <li>• Exponentials and logarithms</li> <li>• Differentiation</li> <li>• Integration</li> <li>• Numerical methods</li> <li>• Vectors</li> <li>• Statistical sampling</li> <li>• Data presentation and interpretation</li> <li>• Probability</li> <li>• Statistical distributions</li> <li>• Statistical hypothesis testing</li> <li>• Quantities and units in mechanics</li> <li>• Kinematics</li> <li>• Forces and Newton’s laws</li> <li>• Moments</li> </ul>	<ul style="list-style-type: none"> <li>Decimals</li> <li>Sequences</li> <li>Inequalities</li> <li>Unit</li> <li>Error interval</li> <li>Rotational symmetry</li> <li>Degrees</li> <li>Quadrilateral</li> <li>Linear sequence</li> <li>Fibonacci</li> <li>Speed</li> <li>Resultant</li> <li>Position vector</li> <li>Congruent</li> <li>Enlargement</li> <li>Fraction of amount</li> <li>Compound interest</li> <li>Decimal multiplier</li> <li>Solve</li> <li>Expand</li> <li>Variable</li> <li>Median</li> <li>Range</li> <li>Intersection</li> </ul>	<ul style="list-style-type: none"> <li>Rationalise</li> <li>Significant figure</li> <li>Solve</li> <li>Quadratic formula</li> <li>Directly proportional</li> <li>Enlargement</li> <li>Congruent</li> <li>Similar</li> <li>Rotation</li> <li>Surface area</li> <li>Cone</li> <li>Frustum</li> <li>Histogram</li> <li>Box-plot</li> <li>North</li> <li>Product</li> <li>Combination</li> <li>Cosine</li> <li>Alternate</li> <li>Segment</li> <li>Theorem</li> <li>Arithmetic</li> <li>Tangent</li> <li>Chord</li> <li>Radius</li> <li>Midpoint</li> <li>Centre</li> </ul>	<ul style="list-style-type: none"> <li>Discriminant</li> <li>Counter-example</li> <li>Polynomial</li> <li>Midpoint</li> <li>Logarithm</li> <li>Exponential</li> <li>Modelling</li> <li>Stationary points</li> <li>Optimization</li> <li>Definite integral</li> <li>Standard deviation</li> <li>Variance</li> <li>Conditional</li> <li>Binomial</li> <li>Frequency</li> <li>Outlier Quotient</li> <li>Implicit differentiation</li> <li>Integration by substitution</li> <li>Parametric</li> <li>Rational</li> <li>Iteration</li> <li>Calculus</li> </ul>

# Year 7

## Curriculum Coherence

*This Year 7 Scheme of Learning has been carefully put together to ensure that our students ‘hit the ground running’ from their transition from Key Stage 2 through to Key Stage 3. The maths team have ordered the same to ensure it is progressive and logical, and continues to build on knowledge acquired at KS2, in addition to delving deeper into reasoning and problem solving through our ‘Bowland’ problem solving lessons. Further, we aim to increase our students love and enthusiasm for ‘real-life’ applications of maths through the delivery of our suite of ‘Real-world maths’ lessons. Our teachers will build on prior learning, by interleaving content, in order to help students consolidate topics and aid retention.*

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<b>Reasoning with number: (AO1-AO3)</b>	<ul style="list-style-type: none"> <li>Place value &amp; rounding</li> <li>Addition &amp; subtraction</li> <li>Multiplication &amp; division</li> </ul>	Place value & rounding <ul style="list-style-type: none"> <li>Order integers and negative numbers</li> <li>Rounding integers and decimals</li> <li>Estimation using significant figures</li> </ul> Addition & subtraction <ul style="list-style-type: none"> <li>With positive/negative integers and decimals</li> <li>With time, bank statements, bounds and perimeter</li> </ul> Multiplication & division <ul style="list-style-type: none"> <li>With positive/negative integers and decimals</li> <li>With time, bank statements, bounds</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Counting Trees &amp; Taxi Cabs</li> <li>Real-world maths: Wages, Household bills, Mobile phone deals</li> </ul>	Significant figure Error Interval Perimeter Area Decimals Sequences Inequalities Bank Statements- Credit/debit	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Application of number: (AO1-AO3)</b>	<ul style="list-style-type: none"> <li>Types of Number</li> <li>Geometric application of number</li> </ul>	Types of number <ul style="list-style-type: none"> <li>Prime, squares, roots, powers</li> <li>LCM/HCF, product of primes</li> <li>Standard form</li> </ul> Geometric application of number <ul style="list-style-type: none"> <li>Area of square, rectangle, triangle, trapezium</li> <li>Compound area</li> <li>Upper and lower bounds</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Youth Hostel &amp; Speedy Santa</li> <li>Real-world maths: Time, Banking, Cost of Xmas</li> </ul>	Cube Square root Power Unit Error interval Indices Index form	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Fractional thinking: (AO1-AO3) Percentages:</b>	<ul style="list-style-type: none"> <li>Understanding fractions</li> <li>Fractional operations</li> <li>Calculating with percentages</li> </ul>	Understanding fractions and fractional operations <ul style="list-style-type: none"> <li>Operations with fractions</li> <li>Representing fractions</li> </ul> Simplifying and equivalence <ul style="list-style-type: none"> <li>Calculating with percentages</li> <li>Percentage of amount/increase/decrease</li> <li>FDP</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Mobile Phones &amp; Security Cameras</li> <li>Real-world maths: Recipes, Build a Farm</li> </ul>	Multiplication Division Fraction of amount Compound interest Decimal multiplier	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>2D Geometry Reasoning: (AO1-AO3)</b>	<ul style="list-style-type: none"> <li>Working with angles</li> <li>Shape properties</li> </ul>	Working with angles <ul style="list-style-type: none"> <li>Angle facts</li> <li>Bearings</li> </ul> Shape properties <ul style="list-style-type: none"> <li>Types of quadrilaterals and triangles</li> <li>Symmetry properties</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Ice Creams &amp; 110 Years On</li> <li>Real-world maths: Direction &amp; Distance, Area &amp; perimeter, School Sports Field</li> </ul>	Compass Rotational symmetry Degrees Quadrilateral Polygon	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Understanding data: (AO1-AO3) Develop algebraic understanding:</b>	<ul style="list-style-type: none"> <li>Different ways to represent data</li> <li>Expressions</li> </ul>	Representing data <ul style="list-style-type: none"> <li>Bar/pie chart, line graphs, pictograms</li> <li>MMMR</li> <li>Probability including sample spaces, frequency trees and venn diagrams</li> </ul> Expressions <ul style="list-style-type: none"> <li>Basic algebra representation</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Tuck Shop &amp; Olympic Cycling</li> <li>Real-world maths: Saving &amp; Borrowing, Converting currencies, Family Holiday</li> </ul>	Key Median Range Intersection and union Expand Factorise Simplify	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Develop algebraic understanding: (AO1-AO3) Revise, Assess, Improve/End of year assessment</b>	<ul style="list-style-type: none"> <li>Equations</li> </ul>	Equations <ul style="list-style-type: none"> <li>Form and solve algebraic equations and inequalities</li> <li>Interleave with area, ratio, etc</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Hilbre Island &amp; Lottery</li> <li>Real-world maths: Best Deal, Summer Fayre</li> </ul>	Solve Expand Variable	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week

# Year 8

## Curriculum Coherence

The Year 8 Scheme of Learning flows seamlessly from Year 7 to ensure that our students continue to build upon their Mathematical fluency, reasoning and problem solving skills.

The maths team have ensured that the order of learning is progressive and logical, and continues to develop fluency, through reasoning and problem solving. In addition, we aim to increase our students love and enthusiasm for maths and improve their understanding for Cultural Capital through an appreciation of everyday uses and application of mathematical concepts.

Our teachers will build on prior learning, by interleaving content, in order to help students consolidate topics and aid retention.

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<b>Algebraic fluency:</b> <b>Working with patterns:</b>	<ul style="list-style-type: none"> <li>Algebraic manipulations</li> <li>Sequences (all types)</li> </ul>	Algebraic Manipulations <ul style="list-style-type: none"> <li>Expand single, double and triple brackets</li> <li>Factorise single brackets and quadratics</li> </ul> Sequences <ul style="list-style-type: none"> <li>Generate a sequence and find the nth term (linear)</li> <li>Quadratic sequences</li> <li>Iteration</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Magic Sum Puzzle &amp; Patchwork Cushions</li> <li>Real-world maths: Money Management, Carbon Footprint, Bedroom Design</li> </ul>	Expand Factorise Simplify Nth term Linear sequence Fibonacci	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Geometry:</b>	<ul style="list-style-type: none"> <li>Angle &amp; scale reasoning</li> <li>2D shape application</li> </ul>	Angle & scale reasoning <ul style="list-style-type: none"> <li>Angles in parallel lines</li> <li>Scale drawings</li> <li>Interior and exterior angles</li> </ul> 2D shape application <ul style="list-style-type: none"> <li>Compound area including trapezia</li> <li>Area and circumference of circles and sectors</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Bunting &amp; Sports Bag</li> <li>Real-world maths: Debt, Tessellation, Plan a Christmas Party</li> </ul>	Parallel Perpendicular Interior and exterior Trapezium Sector Chord	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Geometry and Graphs:</b>	<ul style="list-style-type: none"> <li>Reasoning in 3D</li> <li>Graphs of linear &amp; quadratic functions</li> </ul>	Reasoning in 3D <ul style="list-style-type: none"> <li>Volume and surface area of prisms, cones, pyramids and spheres</li> <li>Plans and elevations</li> </ul> Graphs of linear and quadratic functions <ul style="list-style-type: none"> <li>Drawing and finding the equation of linear graphs</li> <li>Plotting quadratics and finding roots and turning points</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Day Out &amp; Problem Page</li> <li>Real-world maths: Plan a Trip, Mobile Phone Deals</li> </ul>	Gradient Midpoint Elevation Sphere Cylinder	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Ratio &amp; Proportion:</b>	<ul style="list-style-type: none"> <li>Ratio – manipulations</li> <li>Compound Units</li> <li>Direct and inverse proportion</li> </ul>	Ratio- manipulations <ul style="list-style-type: none"> <li>Simplifying/equivalent ratios</li> <li>Part/whole/difference ratios and three-way ratio</li> </ul> Compound units <ul style="list-style-type: none"> <li>DMV and SDT</li> <li>Distance and velocity time graphs</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Smoothies &amp; Candle Box</li> <li>Real-world maths: Exercise, BMI, Food &amp; Nutrition</li> </ul>	Bar modelling Fraction Equivalent Simplify Density Accelerate	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Statistics:</b> <b>Geometry:</b>	<ul style="list-style-type: none"> <li>Working with data</li> <li>Pythagoras &amp; trigonometry</li> </ul>	Working with data <ul style="list-style-type: none"> <li>Averages from data and tables</li> <li>Histograms, frequency polygons, scatter graphs</li> <li>Cumulative frequency and boxplots</li> </ul> Pythagoras and trigonometry <ul style="list-style-type: none"> <li>Pythagoras</li> <li>Finding side or angle using SOHCAHTOA</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Z Factor &amp; Spinner Bingo</li> <li>Real-world maths: Time Management, Cost &amp; Profit, Garden Design</li> </ul>	Cumulative frequency Quartile Interquartile range Median Hypotenuse Adjacent	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Constructions:</b> <b>Algebra:</b> <b>Transformations</b>  <b>Revise, Assess, Improve/End of year assessment</b>	<ul style="list-style-type: none"> <li>Bisectors</li> <li>Simultaneous equations</li> <li>Transformations</li> </ul>	Bisectors <ul style="list-style-type: none"> <li>Triangle constructions, angle and perpendicular bisectors</li> </ul> Simultaneous equations <ul style="list-style-type: none"> <li>Solving linear simultaneous equations including scaling</li> </ul> Transformations <ul style="list-style-type: none"> <li>Rotation, enlargement, reflection and translation</li> <li>Vector resultants</li> </ul>	<ul style="list-style-type: none"> <li>Bowland: Three of a Kind &amp; Cats and Kittens</li> <li>Real-world maths: First Job, Planning a summer holiday</li> </ul>	Loci Bisector Similar Congruent Enlargement Resultant	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week

# Year 9

## Curriculum Coherence

The Year 9 Scheme of Learning has been designed to ensure that our students build upon the mathematical knowledge acquired at Key Stage 2, and continue to develop fluency, reasoning and problem solving through Key Stage 3.

The Maths team have ensured that the order of learning is progressive and logical, and continues to develop deeper understanding through careful interleaving of content.

We strive to increase our students love and enthusiasm for maths, and improve understanding of real-world applications, through a series of lessons focused on 'Personal Finance', which are:

HT1 - Bank accounts & bank cards

HT2 - Debt

HT3 - Wages & deductions

HT4 - Household Budgeting

HT5 - Renting versus Mortgages

HT6 - First Car

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<u>Number – reasoning/problem solving</u>	Use of Number systems Fractional reasoning Application of percentages	Use of number systems <ul style="list-style-type: none"> <li>Product of primes</li> <li>HCF and LCM</li> <li>Operations with standard form</li> <li>Fractional and negative indices</li> </ul> Fractional reasoning and percentages <ul style="list-style-type: none"> <li>Mixed number operations</li> <li>Complex percentage problems</li> </ul>	Real-world maths: Deforestation, Environmental impact of food	Factor and multiple Index form Mixed and Improper fractions Compound interest	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<u>Application of Compound Measures</u> <u>Transformations</u>	Ratio and proportion Use of transformations	Ratio and proportion <ul style="list-style-type: none"> <li>DMV and SDT</li> <li>Ratio problem solving</li> </ul> Direct and inverse proportion Use of transformation <ul style="list-style-type: none"> <li>Describing advanced transformations</li> <li>Vector Geometry</li> </ul>	Real-world maths: Petrol v hybrid v electric cars, Solar power/renewable energy	Density Velocity Speed Resultant Position vector	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<u>Algebra:</u>	Algebraic manipulation Displaying Data	Algebraic manipulations <ul style="list-style-type: none"> <li>Solving algebraic fractions</li> <li>Expand and factorise quadratics</li> <li>Substitution into formula</li> </ul>	Real-world maths: Littering recycling and plastic ocean, Carbon Footprint	Simplify Expand Solve Expression Identity	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<u>Statistics:</u> <u>Geometry:</u> <u>Number:</u>	Working with angles Surd	Working with angles <ul style="list-style-type: none"> <li>Angle facts including polygons and parallel lines</li> <li>Circle theorems</li> <li>Geometric proof</li> </ul> Surds <ul style="list-style-type: none"> <li>Operations and rationalising</li> </ul>	Real-world maths: Global warming, Home energy efficiency	Rationalise Segment Alternate segment Tangent radius	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<u>Geometry:</u> <u>Algebra:</u>	Shape & Space application Pythagoras & Trigonometry Sequences Further simultaneous equations	Shape and space application <ul style="list-style-type: none"> <li>Volume and area and surface area of complex 3d and 2d shapes</li> </ul> Pythagoras & Trigonometry <ul style="list-style-type: none"> <li>As in Y9 plus Sine, cosine and area of triangle rule</li> </ul> Simultaneous equations <ul style="list-style-type: none"> <li>Linear and quadratic equations</li> </ul>	Real-world maths: Rising sea levels, Climate and weather predictions	Frustum Cylinder Cosine rule Quadratic equation	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<u>Probability:</u> <u>Algebra:</u>	Understanding probability Interpret and use graphs	Understanding probability <ul style="list-style-type: none"> <li>As in Y8 plus conditional probability</li> </ul> Interpret and use graphs <ul style="list-style-type: none"> <li>Equation of parallel and perpendicular lines</li> <li>Graphical inequalities</li> <li>Circles and tangents</li> </ul>	End of Year assessment/Revise/assess /improve	Tangent Radius Diameter Tree diagram	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week

## Curriculum Coherence

# Year 10

The Year 10 Scheme of Learning continues to build on the development of the three Assessment Objectives (AO1 - fluency, AO2 - reasoning and AO3 - problem solving), providing an enriched Programme of Study, offering stretch and challenge, so that all students are fully equipped for the rigour of GCSE preparation during Year 11. We aim to help our students realise the importance of maths by making links with '**Real-World Maths**' through a series of lessons which focus on developing students understanding of '**Money and Careers**', which goes **over and above** the statutory National Curriculum content. These lessons cover:

- HT1 - Managing Money
- HT2 - Student Finance
- HT3 - Apprenticeships versus Higher Education
- HT4 - Being Self-Employed
- HT5 - Careers & the Climate
- HT6 - Artificial Intelligence & Careers

Our teachers will build on prior learning, by interleaving content, in order to help students consolidate topics and aid retention.

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<b>F/H: Number – reasoning/problem solving</b> <b>Constructions:</b> <i>Higher tier only: purple topics on MTP's</i>	Number systems – use of Fractional reasoning Application of percentages Construct triangles, Loci & regions	Applications of number <ul style="list-style-type: none"> <li>• Estimation</li> <li>• Recurring decimals</li> <li>• Surds</li> </ul> Fractional reasoning <ul style="list-style-type: none"> <li>• Operations and solving with algebraic fractions</li> <li>• Solving quadratics</li> </ul> Applications of percentages (as in Y9)	<b>Real-world maths: Bank statements etc, Debt and overdrafts and loans</b>	Rationalise Significant figure Solve Quadratic formula	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>F/H: Number – reasoning/PS (cont):</b> <b>F/H: Ratio &amp; Proportion:</b> <b>F/H: Geometry:</b> <i>Higher only: purple topics on MTPs</i>	Application of compound measures Use of transformations	Application of compound measures <ul style="list-style-type: none"> <li>• Y9 plus problem solving/advanced techniques</li> <li>• Direct and inverse proportion</li> </ul> Use of transformations <ul style="list-style-type: none"> <li>• Y9 plus problem solving/advanced techniques</li> <li>• Fractional and negative enlargement</li> </ul>	<b>Real-world maths: Wages and payslips, Calculating tax</b>	Directly proportional Enlargement Congruent Similar Rotation	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>F/H: Geometry:</b> <b>F/H: Algebra:</b> (plus additional unit for higher tier) <b>F/H: Statistics:</b> <i>Higher only: purple topics on MTPs</i>	Application of shape & space Algebraic manipulation Displaying data	Application of shape & space <ul style="list-style-type: none"> <li>• Volume, area and surface area of 2d and 3d shapes</li> <li>• More complex conic sections and frustums</li> </ul> Algebraic manipulation <ul style="list-style-type: none"> <li>• Changing the subject</li> <li>• Quadratics solving methods</li> <li>• Algebraic fractions</li> </ul> Displaying data <ul style="list-style-type: none"> <li>• Advanced data analysis including histograms, cumulative frequency</li> </ul>	<b>Real-world maths: Budgeting, Cost of living</b>	Surface area Cone Frustum Histogram Box-plot Describe Compare	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>F/H: Probability:</b> <b>F/H: Geometry:</b> <i>Higher only: purple topics on MTPs</i>	Calculating/using probability Working with angles Pythagoras & Trigonometry	Calculating/using probability <ul style="list-style-type: none"> <li>• Y9 product rule for counting, conditional probability, venn diagrams</li> </ul> Working with angles <ul style="list-style-type: none"> <li>• Bearings</li> <li>• Circle theorems</li> <li>• Proof</li> </ul> Pythagoras & Trigonometry <ul style="list-style-type: none"> <li>• Sine and cosine rule/ advanced trigonometry</li> </ul>	<b>Real-world maths: Buying on finance, Mortgages</b>	North Product Combination Cosine Alternate Segment Theorem	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>F/H: Algebra:</b> <i>Higher only: purple topics on MTPs</i>	Sequences Simultaneous equations Interpret and use graphs	Sequences <ul style="list-style-type: none"> <li>• Nth term of linear and quadratic sequences</li> <li>• Special sequences, e.g Fibonacci</li> </ul> Simultaneous equations Interpret and use graphs <ul style="list-style-type: none"> <li>• Tangents and circles</li> <li>• Equation of the line</li> <li>• Graphical solutions to quadratics</li> </ul>	<b>Real-world maths: Cost and profit, First car</b>	Geometric Arithmetic Tangent Chord Radius Midpoint Centre	In-class summative assessment, assessing the key knowledge and concepts. Each unit is equally weighted, consisting of 30 mins/30 marks assessment.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
Red Assessment book RAG/ Revision for mock exams	Red Assessment book RAG/ Revision for mock exams	All of above (for Y10)	Work experience	All of above (for Y10)	Mock exams	Independent learning tasks are set by each class teacher, weekly,

focused on developing more in-depth understanding of the topics covered that week

# Year 11

## Curriculum Coherence

During Year 11 students continue to build upon their *Mathematical knowledge* through the development of **fluency, reasoning and problem solving skills**, providing an enriched programme of study that caters for all abilities and offers stretch and challenge so that all pupils are fully equipped and prepared for *GCSE exams and beyond*

The Maths team have ensured that the order of learning is **progressive and logical**, and continues to develop fluency, through reasoning and problem solving. In addition, we aim to increase our students love and enthusiasm for maths and improve their understanding for maths around them in their everyday lives, through an appreciation of everyday uses and application of mathematical concepts.

The approach to study is bespoke and targeted during Year 11, where key topics of focus are identified based on student performance in mock exams and common topic lists. This approach ensures that all students are able to feel confident of success in their *GCSE maths exams*. Our teachers will build on prior learning, by interleaving content, in order to help students consolidate topics and aid retention.

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
QLA from June mocks Common Topics List to prepare for November mock	Common Topics List to prepare for November mock	All of above (for Y7-10)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	All of above (for Y7-10)	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
QLA from June mocks Common Topics List to prepare for November mock	Common Topics List to prepare for November mock	All of above (for Y7-10)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	All of above (for Y7-10)	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term. 1 <sup>st</sup> round of mock exams	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
QLA analysis from November mock. Revise/assess/improve – bespoke to each class.	‘Common Topics List’ and QLA used to identify topic for revision.	All of above (for Y7-10)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	All of above (for Y7-10)	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.mmon topics test (weekly)	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
QLA analysis from December mock. Revise/assess/improve – bespoke to each class.	‘Common Topics List’ and QLA used to identify topic for revision.	All of above (for Y7-10)	Common topics test (weekly)- unseen exam	All of above (for Y7-10)	Key learning checks (2 weekly)- set by each class	Independent learning tasks are set by each class teacher, weekly, focused on developing

			question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics		teacher to assess retention of topics covered in the short and medium term.	more in-depth understanding of the topics covered that week
QLA analysis from January mock. Revise/assess/improve	'Common Topics List' and QLA used to identify topic for revision.	All of above (for Y7-10)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	All of above (for Y7-10)	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week

Year 12	<b>Curriculum Coherence</b>
	The Year 12 Scheme of Learning ensures that our students continue to build upon their Mathematical fluency, reasoning and problem solving skills, providing an enriched programme of study that caters for all abilities and offers stretch and challenge so that all pupils are fully equipped and prepared to lay a solid foundation for their A Level.
	The Maths team have ensured that the order of learning is progressive and logical, and continues to develop fluency, through reasoning and problem solving. In addition, we aim to increase our students love and enthusiasm for maths and improve their understanding for Cultural Capital through an appreciation of everyday uses and application of mathematical concepts.  Our teachers will build on prior learning, by interleaving content, in order to help students consolidate topics and aid retention.

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
<b>Pure – Year 11 to 12 bridge and extend</b>  <i>Bridging unit between GCSE and year 12. It builds on concepts that they have covered in year 11.</i>	<ul style="list-style-type: none"> <li>&gt; Proof and mathematical communication</li> <li>&gt; Indices and surds</li> <li>&gt; Quadratic functions</li> <li>&gt; Polynomials</li> <li>&gt; Using graphs</li> </ul>	Proof by exhaustion and deduction Manipulating surds Quadratic (disguised) and discriminants Factor theorem Sketching and solving graphically	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Discriminant Counter-example Inequalities Polynomial	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Pure (1)</b>	<ul style="list-style-type: none"> <li>&gt; Coordinate geometry</li> <li>&gt; Logarithms</li> <li>&gt; Exponential Models</li> <li>&gt; Binomial expansion</li> <li>&gt; Trigonometric functions and equations</li> </ul>	Laws of logarithms Solving exponential equations Exponential models Binomial theorem Trigonometric graphs and identities Sine, cosine and area of triangle rules	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Midpoint Radius Logarithm Exponential Modelling Binomial theorem Trigonometric graphs	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week

<b>Pure (2)</b>	<ul style="list-style-type: none"> <li>&gt; Triangle geometry</li> <li>&gt; Differentiation</li> <li>&gt; Applications of differentiation</li> <li>&gt; Integration</li> </ul>	Rules of differentiation and integration Differentiation from first principles Tangents normal and stationary points Area under a curve Finding the equation of a curve	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Stationary points Optimization Definite integral	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Mechanics</b>	<ul style="list-style-type: none"> <li>&gt; Vectors</li> <li>&gt; Introduction to kinematics</li> <li>&gt; Motion with constant acceleration</li> <li>&gt; Forces and motion</li> <li>&gt; Objects in contact</li> </ul>	Position and displacement vectors Vector geometry Kinematics and calculus Displacement velocity and acceleration Motion under gravity SUVAT Newtons laws Connected particles Pulleys	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Position vector Unit vector Kinematics Velocity Displacement Gravity Weight	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Statistics</b>	<ul style="list-style-type: none"> <li>&gt; Working with data</li> <li>&gt; Probability</li> <li>&gt; Statistical hypothesis testing</li> <li>&gt; Analysis of Data using Statistical Packages</li> </ul>	Statistical diagrams Measures of dispersion and central tendency Correlation Binomial distribution Population and samples Hypothesis testing and critical regions	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Standard deviation Variance Conditional Binomial Frequency Outlier	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
> Revise	<ul style="list-style-type: none"> <li>&gt; Individual student QLA following feedback from mock exam</li> </ul>	All of the above (Y12)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	All of the above (Y12)	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.  <b>MOCK EXAMS</b>	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week

### Curriculum Coherence

## Year 13

The Year 13 Scheme of Learning ensures that our students continue to build upon their Mathematical fluency, reasoning and problem solving skills, providing an enriched programme of study that caters for all abilities. Year 13 builds on the solid foundation from Year 12.

The Maths team have ensured that the order of learning is progressive and logical, and continues to develop fluency, through reasoning and problem solving. In addition, we aim to increase our students love and enthusiasm for maths and improve their understanding for Cultural Capital through an appreciation of everyday uses and application of mathematical concepts.

Our teachers will build on prior learning, by interleaving content, in order to help students consolidate topics and aid retention.

Medium Term Plan Title/Topic	Themes/Concepts	Key Core Knowledge Foci	Application/Skills Foci	Ambitious Tier 2/3 Vocabulary	Assessment	Independent Learning
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<b>Pure (1)</b>	<ul style="list-style-type: none"> <li>&gt; Proof and mathematical communication</li> <li>&gt; Functions</li> <li>&gt; Further transformations of graphs</li> <li>&gt; General binomial expansion</li> <li>&gt; Sequence and series</li> <li>&gt; Rational functions and partial fractions</li> <li>&gt; Radian measure</li> <li>&gt; Further Trigonometry</li> <li>&gt; Calculus of exponential and trigonometric functions</li> </ul>	Proof by contradiction Mappings and functions Domain and range Geometric and arithmetic sequences Modulus function Factor theorem Radian measure Compound angles, double angles Trigonometric identities (advanced)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Contradiction Counterexample Domain Inverse Composite Sigma notation Sum to infinity Partial fraction Identities	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Pure (2)</b>	<ul style="list-style-type: none"> <li>&gt; Further differentiation</li> <li>&gt; Further integration techniques</li> <li>&gt; Further applications of calculus</li> <li>&gt; Differential equations</li> <li>&gt; Numerical solution of equations</li> <li>&gt; Numerical integration</li> <li>&gt; Application of vectors</li> </ul>	Chain, product and quotient rule Implicit differentiation Differentiating inverse functions Integration by substitution and parts Integrating rational and trigonometric functions Connected rates of change Newton-Raphson and trapezium rule Modelling and solving differential equations Motion in 2d and 3d using vectors (geometrical problems)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Quotient Implicit differentiation Integration by substitution Parametric Rational Iteration Calculus	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.  <b>MOCK EXAMS</b>	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Mechanics</b>	<ul style="list-style-type: none"> <li>&gt; Projectiles</li> <li>&gt; Forces in context</li> <li>&gt; Moments</li> </ul>	Projectile motion Trajectory of a projectile Resolving forces Motion with friction Moments and equilibria	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Projectile Coefficient Equilibrium Resolving forces	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
<b>Statistics</b>	<ul style="list-style-type: none"> <li>&gt; Further hypothesis testing</li> <li>&gt; Conditional Probability</li> <li>&gt; The normal distribution</li> </ul>	Two-way tables Tree diagrams The normal distribution Further hypothesis testing with the normal distribution Hypothesis testing for correlation coefficient	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	Normal distribution Hypothesis Mean Probability Two-way table	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.  <b>MOCK EXAMS</b>	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week
QLA analysis from January mock. Revise/assess/improve	Common Topics List' and QLA used to identify topic for revision.	All of the above (Y12 and Y13)	Common topics test (weekly)- unseen exam question so that students are able to improve exam technique.  Targeted homework/independent learning tasks linked to QLA and common topics	All of the above (Y12 and Y13)	Key learning checks (2 weekly)- set by each class teacher to assess retention of topics covered in the short and medium term.	Independent learning tasks are set by each class teacher, weekly, focused on developing more in-depth understanding of the topics covered that week