

Subject Overview Mathematics – Year 11 Higher

Extending their learning even further into more complex and abstract mathematics, students will learn to become agile and resourceful in their approaches to solving advanced multi-discipline problems, preparing them well for post-16 qualifications, such as A-Level Mathematics.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	<p>U1 Linear Inequalities (10 Lessons) Represent, construct & solve inequalities. Identify feasible regions on graphs.</p> <p>U2 Circle Theorems (10 Lessons) Know and use the circle theorems to solve multi-step angle reasoning problems.</p> <div style="border: 1px solid black; padding: 5px;"> <p>AP1 Assessment</p> <ul style="list-style-type: none"> Fractions, % & ratio Factorising expressions Simultaneous equations Form & solve equations Algebraic fractions Combined mean Tree Diagrams Angles & parallel lines Pythagoras' Theorem </div> <p>U3 Advance Triangles (12 Lessons) Use Trigonometry and Pythagoras with problems in 3D. Extend the use of trigonometry to non-righted angled triangles.</p>	<p>U4 Transformation (7 Lessons) Construct and describe reflections, rotations, translations and enlargements on coordinate axes.</p> <div style="border: 1px solid black; padding: 5px;"> <p>AP2 Mock Assessment Students will complete three Maths papers, designed to replicate their actual GCSE examination. These assessments will cover the entire GCSE curriculum, with the exception of any topics not yet taught.</p> </div> <p>U5 Coordinated Geometry (8 Lessons) Explore graphically & algebraically problems with non, linear equations, parallel & perpendicular lines.</p>	<p>U6 Functions (7 Lessons) Solve numerical & algebraic problems with functions.</p> <p>U7 Proof (9 Lessons) Explore how to prove things mathematically from algebraic & number problems, circle theorems & other geometric problems.</p> <div style="border: 1px solid black; padding: 5px;"> <p>AP3 Assessment</p> <ul style="list-style-type: none"> Circle Theorems Sine & Cosine Rule 2D Shape Transformations Functions Velocity-time graphs Algebraic Proof Bespoke weak areas identified from the mock </div> <p>U8 Rate of Change (5 Lessons) Solve speed, distance & time problems. Explore distance-time, and velocity-time graphs.</p>	<p>U9 Algebraic Probability (5 Lessons) of more than one event by forming & solving equations</p> <p>U10 Advanced Equations (15 Lessons) Solve non-linear simultaneous equations algebraically & graphically. Solve quadratic inequalities. Sketch non-linear graphs & illustrate functional transformations.</p> <p>U11 Vectors (1 Lessons) Master vectors: direction, magnitude, calculations, representations, and geometric applications for problem-solving</p>	<p>U11 Vectors (4 Lessons) Continued from HT4</p> <p>U12 Loci & Construction (5 Lessons) Construct 2D shapes & bisectors. Apply them to loci problems. Draw & calculate bearings.</p> <p>Revision Bespoke revision, precisely tailored to address areas identified for improvement through assessment.</p> <p>Start of Examinations</p>	
Beyond The Curriculum	<p>YouTube Trigonometry in real life Explore how trigonometry is used everywhere. We just don't know enough to see it.</p> <p>YouTube Linear Programming Explore how you could use your inequalities skills with real life business problems.</p>	<p>YouTube Transformations in Video Games Transformations: how game engines move, spin, resize objects in a computer game.</p> <p>3-word Global Mapping Website 40,000 words create 64 trillion unique combinations to track any position on the planet.</p>	<p>YouTube Sum of natural numbers A controversial proof that shows that the sum of all positive counting number is $-1/12!$</p> <p>YouTube Speed of Light Explore why nobody has been able to measure it, and the challenges in doing so.</p>	<p>YouTube Game Theory - TED Talk Learn how Game Theory uses logic & probability to analyse the choices people make to get best outcomes.</p> <p>YouTube The Bayesian Trap The doctor tells you the test is 99% accurate. Is that really true?</p>	<p>Euclidea Online Puzzle Game Solve geometry puzzles by constructing shapes using your construction & loci skills.</p> <p>YouTube How does GPS work? Learn how loci are important to understanding how GPS works.</p>	

Subject Overview Mathematics – Year 11 Foundation

Students will extend their understanding from all core areas by tackling challenging, multi-step contextual problems that interleave topics. They will continue exploring abstract algebra's real-world applications, building a robust foundation for post 16 study as confident, numerate citizens.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	<p>U1 Angles & Polygons (9 Lessons) Solve interior and exterior angle reasoning problems within polygons.</p> <p>U2 Advance Proportion (10 Lessons) Use direct & inverse proportion to solve complex problems. Express relationships using algebra.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>AP1 Assessment</p> <ul style="list-style-type: none"> • Prime factors • Calculating with fractions • Rounding & Estimation • Percentage calculations • Sharing by ratio • Form & solve equations • Linear sequence & nth term • Straight line graphs • Stem & leaf diagrams </div> <p>U3 Circles, Sectors & Arcs (9 Lessons) Solve contextual geometric problems involving semi, quarter circles & other 2D shapes</p> <p>U4 Advance Probability (7 Lessons) See HT2 for description</p>	<p>U4 Advance Probability (2 Lessons) Explore finding the probability of combined events using probability-space & tree diagrams.</p> <p>U5 Real Life Graphs (7 Lessons) Construct and interpret liner graphs in context</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>AP2 Mock Assessment</p> <p>Students will complete three Maths papers, designed to replicate their actual GCSE examination. These assessments will cover the entire GCSE curriculum, with the exception of any topics not yet taught.</p> </div> <p>U6 Non-Linear Graphs (5 Lessons) Explore the graphs of quadratics, cubic, reciprocals</p>	<p>U7 Transformations (10 Lessons) Construct and describe reflections, rotations, translations and enlargements on coordinate axes.</p> <p>U8 Advanced Area & Volume (10 Lessons) Find the surface area & volume of prisms, cones, spheres, and pyramids.</p> <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> <p>AP3 Assessment</p> <ul style="list-style-type: none"> • Angles & Polygons • Area & Perimeter of circles, quarter & semi circles • Tree Diagrams • Quadratic Graphs • Transformations • Area & Volume • Bespoke weak areas identified from the mock </div>	<p>U9 Contstructions & Loci (15 Lessons) Use construct skills, bearings & map scales to identify points & feasible regions from contextual mapping problems.</p> <p>U10 Similarity & Congruence (3 Lessons) Understand the difference between similar & congruent 2D shapes. Solve length & angle problems with similar shapes</p> <p>U11 Advanced Equations (5 Lessons) Form linear equations from context in two variables & solve them simultaneously. Solve quadratic equations by factorising.</p>	<p>U11 Advanced Equations (10 Lessons) Continued from HT4</p> <p>Revision Bespoke revision, precisely tailored to address areas identified for improvement through assessment.</p> <p>Start of Examinations</p>	
Beyond The Curriculum	<p>Motorsport Manager 3 Manage a motorsport team & build a car to win. IOS & Android.</p> <p>YouTube Earth Circumference How the circumference of the earth was measured thousands of years ago with only a stick & the use of shadows.</p>	<p>YouTube The Bayesian Trap The doctor tells you the test is 99% accurate. How accurate is it really?</p> <p>YouTube Railway Timetables with Graphs How are trains are scheduled so that they don't block each other.</p>	<p>YouTube SuperAdobe Houses Explores how houses can be made from earth using layered circles.</p> <p>Dream Big (Film) Explores incredible feats of engineering & the maths behind them.</p>	<p>Euclidea Online Puzzle Game Solve geometry puzzles by constructing shapes using your construction & loci skills.</p> <p>YouTube How does GPS work? Learn how loci are important to understanding how GPS works.</p>	<p>Youtube How does the stock market work? Explore the stock market & understand how the world of money works.</p>	

Subject Overview Mathematics – Year 11 Building a Mathematician

Students will consolidate and further extend their learning from all core areas by tackling complex, multi-step contextual problems and some abstract algebra. This will build a strong foundation, empowering them to become confident numerate citizens.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	<p>U1 & U2 Advance Number (6 Lessons) Solved contextual GCSE problems using number skills. Solve HCF/LCM GCSE problems</p> <p>U2 Further HCF & LCM (3 Lessons)</p> <p>U3 Further Measures (4 Lessons) Calculate speed. Convert between compound units of measure.</p> <p>U4 FDP & Calculations (11 Lessons) Calculate repeated percentage change. Solve problems with FDP.</p> <div style="border: 1px solid black; padding: 5px;"> <p>AP1 Assessment</p> <ul style="list-style-type: none"> • Calculating with fractions • Rounding & Estimation • Percentage calculations • Sharing by ratio • Form & solve equations • Straight line graphs </div> <p>U5 Proportion Consolidation (7 Lessons) Consolidate by exploring ratio & proportion GCSE problems.</p>	<p>U6 Advance Simplify & Solve (10 Lessons) Expand & factorise quadratics. Use index laws to simplify expressions. Form & solve equations from problems.</p> <div style="border: 1px solid black; padding: 5px;"> <p>AP2 Mock Assessment Students will complete three Maths papers, designed to replicate their actual GCSE examination. These assessments will cover the entire GCSE curriculum, except for any topics not yet taught.</p> </div> <p>U7 Real Life Graphs (13 Lessons) Explore conversion graphs from exchange rate, units & utility bills. Understand & explore problems with distance-time graphs.</p>	<p>U7 Real Life Graphs (13 Lessons) Continued from HT2.</p> <p>U8 Transformations (10 Lessons) Construct and describe reflections, rotations, translations and enlargements on coordinate axes.</p> <p>U9 Probability Consolidation (7 Lessons) Consolidate by exploring GCSE problems on probability of both outcomes from single events and combined outcomes from two different events.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Checkpoint 2</p> <ul style="list-style-type: none"> • Transformations • Real life graphs • Probability • Bespoke weak areas identified from the mock </div>	<p>U9 Probability Consolidation (3 Lessons) Continued from HT3.</p> <p>U10 Angles & Reasoning Consolidation (9 Lessons) Explore a variety of GCSE angle problems with a strong emphasis of writing formal reasons.</p> <p>U11 Constructions (5 Lessons) Construct bisectors & use these skills to identify feasible regions from contextual mapping problems.</p> <p>U12 Averages & Spread Consolidation (5 Lessons) Consolidate s by exploring GCSE style problems on averages & the range from lists, tables & charts.</p>	<p>U13 Area & Volume Consolidation (8 Lessons) Consolidate by exploring GCSE style problems on area of 2D shapes and volume of prisms.</p> <p>U14 Representing Data Consolidation (8 Lessons) Consolidate by exploring GCSE problems involving bar charts, pictograms, pie charts, scatter graphs & frequency polygons.</p> <p>Revision Bespoke revision, precisely tailored to address areas identified for improvement through assessment.</p> <p>Start of Examinations</p>	
	Beyond The Curriculum	<p>YouTube How Formula 1 teams use data Explore the exciting world of F1 & see how race engineers use data to maximise performance.</p> <p>Motorsport Manager 3 Manage a motorsport team & build a car to win. Play on IOS & Android.</p>	<p>YouTube Railway Timetables with Graphs Learn how are trains are scheduled so that they don't block each other.</p> <p>YouTube 8 Minutes of magic Find out how long the light of the sun takes to get to here every morning.</p>	<p>YouTube What Does "A 50% Chance of Rain" Actually Mean? Explains how probability is used to make weather predictions.</p> <p>YouTube The science of symmetry Explore the types of symmetry & why they are important in real life.</p>	<p>Euclidea Online Puzzle Game Solve geometry puzzles by constructing shapes.</p> <p>YouTube How does GPS work? Learn how loci are important to understanding how GPS works.</p>	<p>Dream Big (Film) Explores incredible feats of engineering & the maths behind them.</p> <p>Youtube How does the stock market work? Explore the stock market & understand how the world of money works.</p>