# KS5 Curriculum Overview: **A-Level Mathematics**

COMBERTON SIXTH FORM

|  | Autumn Term | Spring Term | Summer Term |
|---|---|---|---|
| **Year 12** | Curriculum and Skills:<br><br>**Pure:** An introduction to key mathematical concepts such as Logarithms, Polynomials, Coordinate Geometry, Trigonometric Equations and Binomial Expansion.<br><br>**Mechanics:** Gain an understanding of motion using Kinematics graphs, vectors and SUVAT equations | Curriculum and Skills:<br><br>**Pure:** An introduction to calculus, a vital mathematical topic. Following our work on polynomials, we will explore what happens when we transform graphs<br><br>**Mechanics:** Forces and Newton's Laws<br><br>**Statistics:** Deepen your understanding of Probability by exploring the Binomial Distribution. We will also introduce you to a Large Data Set and explore ways of analysing and representing data | Curriculum and Skills:<br><br>**Pure:** We will apply our knowledge of logarithms and calculus, allowing us to explore optimisation problems. We will also start the Year 13 syllabus with Numerical Methods<br><br>**Mechanics:** We can now combine calculus and Kinematics with variable acceleration<br><br>**Statistics:** Continuing with the Binomial Distribution, we will now be able to conduct Hypothesis Tests |
| | Assessment:<br>Baseline assessment (First week of term)<br>Progress check (First week after half-term) | Assessment:<br>Year 12 Mocks (January) | Assessment:<br>Year 12 End of Year Exams (June) |
| **Year 13** | Curriculum and Skills:<br><br>**Pure:** Exploring Trigonometry (Radians, Reciprocal and Inverse functions, and Double Angle Identities), Differentiation of exponential and trigonometric functions, exploring inverse and modulus functions<br><br>**Mechanics:** Extending Year 12 topics of Kinematics, Vectors and Forces to explore 2D, 3D and inclined planes. Understanding the impact of Friction on motion | Curriculum and Skills:<br><br>**Pure:** Understand and use the structure of mathematical proof, Integrate exponential, reciprocal and trigonometric functions, and express curves parametrically<br><br>**Mechanics:** Modelling motion under gravity in a vertical plane using vectors; Projectiles<br><br>**Statistics:** Furthering the work completed in Year 12, we will explore Probability when events are dependent and understand the probabilities of events that follow the Normal Distribution | Curriculum and Skills:<br><br>**Pure:** Constructing and solving simple differential equations in context (e.g. rate of growth of population)<br><br>Revision and consolidation across the syllabus |
| | Assessment:<br>UCAS Grade review test (Third week of term)<br>Progress Check (First week after half-term) | Assessment:<br>Year 13 Mocks (March) | Assessment:<br>AQA GCE A-level Mathematics:<br>    Paper 1 - Pure<br>    Paper 2 - Pure & Mechanics<br>    Paper 3 - Pure & Statistics |