Y13 Maths	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Theme/Big Idea	Developing Advanced Mathematical Modelling and Analytical Thinking through Functions and Trigonometry.	Developing Advanced Calculus and Mathematical Modelling for Solving Complex Problems	Developing Mathematical Modelling and Statistical Inference for Analysing Real-World Systems and Data	Developing Mathematical Modelling and Probabilistic Reasoning for Analysing Motion and Uncertainty	Consolidating Mathematical Understanding and Developing Examination Confidence Through Deliberate Practice	
Content What are they learning? (including keywords)	**P2 Unit 5** Students work confidently in radians, calculating arc lengths, sectors and segments, solving equations and applying small-angle approximations. **P2 Unit 6** Students extend their understanding of trigonometry through the functions secant, cosecant and cotangent. They explore graphs, identities and inverse functions, developing fluency in their use and applying them to solve trigonometric problems. **P2 Unit 7**	**P2 Unit 9** Students extend differentiation techniques to trigonometric, exponential and logarithmic functions, applying product, quotient and chain rules, implicit and parametric differentiation, and using derivatives to interpret rates of change and function behaviour. **P2 Unit 11 (part 1)** Students extend integration techniques using standard integrals, substitution, integration by parts and partial fractions.	**P2 Unit 11 (part 2)** Completion of unit from Term 2 **M2 Unit 5** Students resolve forces into components, analyse motion on inclined planes and investigate friction, applying mathematical models to solve equilibrium and motion problems. **M2 Unit 7** Students apply force models to ladders and connected particle systems, analysing force interactions, equilibrium and motion within realistic mechanical contexts. **S2 Unit 1**	**M2 Unit 6** Students resolve horizontal and vertical velocity components to model projectile motion. They analyse motion at different projection angles and derive and apply projectile motion formulae. **M2 Unit 8** Students apply vector methods to kinematics, including projectile motion and variable acceleration. They use calculus with vectors to model and solve motion problems. **S2 Unit 2** Students use set notation, Venn diagrams and tree	Students consolidate and extend their understanding of the course through structured practice of past examination questions under both timed and untimed conditions. They refine methods, improve accuracy and application, and develop effective examination techniques through the analysis of mark schemes, examiner reports and common misconceptions. Through regular exposure to examination-style questions, students also develop confidence in managing their time	Activity will continue as in Term 5 until exams are complete.

	Students extend trigonometric techniques using angle addition and double-angle formulae, solving equations, proving identities and modelling real-world situations with trigonometric functions. **P2 Unit 8** Students work with parametric equations, sketching graphs, finding intersections and converting between parametric and Cartesian forms to model mathematical situations. **P2 Unit 12** Students extend vector methods into three dimensions using i, j, k notation to solve geometric and mechanics problems. **P2 Unit 10** Students apply numerical methods to locate roots using sign changes, iteration and the Newton-Raphson method, investigating iterative solutions to equations.	They solve differential equations, estimate areas using the trapezium rule and apply integration to increasingly sophisticated mathematical contexts. **M2 Unit 4** Students use moments to analyse rotational effects, solve equilibrium and tilting problems, and locate centres of mass. They apply mathematical models to investigate forces acting on objects in a range of mechanical situations.	Students use logarithmic graphical methods to investigate exponential relationships, measure correlation and apply hypothesis testing to evaluate the significance of relationships. **S2 Unit 3** Students use the Normal distribution to calculate probabilities, approximate Binomial models, apply population measures and conduct hypothesis testing to draw conclusions.	diagrams to represent probability. They calculate conditional probabilities and apply probability formulae to solve problems.	effectively, improving the speed, efficiency and accuracy with which they select and apply appropriate methods under examination conditions.	

Skills How are they learning it?	Apply trigonometric reasoning in radians to recognise relationships, prove identities, solve equations and model real-world situations . Use mathematical thinking to represent and analyse relationships through parametric equations and multiple function representations. Apply vector reasoning in three dimensions using i, j, k notation to represent position, direction and movement, and solve geometric and mechanical problems. Apply numerical methods to approximate solutions and evaluate the efficiency and accuracy of different techniques **Key vocabulary listed in Appendix 1**	Apply advanced calculus techniques to analyse functions, rates of change and mathematical behaviour. Use differentiation and integration to model, solve and interpret problems involving change, accumulation and optimisation. Apply mathematical reasoning to select and justify appropriate calculus methods, including substitution, integration by parts and partial fractions. Use mechanical models involving moments, equilibrium and centres of mass to analyse forces and solve real-world problems. **Key vocabulary listed in Appendix 1**	Apply mathematical modelling and force reasoning to analyse forces, friction, equilibrium and motion in static and dynamic mechanical systems. Apply statistical thinking to identify relationships in data using logarithmic methods, correlation and probability distributions. Use statistical inference to evaluate evidence and draw conclusions through hypothesis testing and probability models. **Key vocabulary listed in Appendix 1**	Apply mathematical modelling to analyse projectile motion using velocity components and established motion formulae. Use vector reasoning and calculus to represent and solve increasingly sophisticated kinematics problems. Apply probabilistic reasoning to analyse events, relationships and outcomes using sets, diagrams and probability formulae. Use mathematical reasoning to interpret conditional probability and justify solutions in complex probability contexts. **Key vocabulary listed in Appendix 1**	Apply mathematical knowledge fluently and accurately across a wide range of examination-style questions. Develop effective strategies for selecting, applying and communicating appropriate mathematical methods. Use examiner feedback, mark schemes and model solutions to improve accuracy and maximise marks. Build confidence and resilience through timed practice and reflection on performance. Evaluate and refine examination technique to improve efficiency, precision and problem-solving under pressure.	
Key Questions	**What** advantages do radians provide, **why** are they fundamental to advanced trigonometry, and **how** can they be used to solve problems and model relationships?	**How** do the product, quotient and chain rules extend our ability to differentiate functions and **how** do we decide which rule to apply? **What** do implicit and parametric	**How** can forces be resolved and modelled, **why** is this important, and **how** can it help us analyse motion and equilibrium? **What** conditions are required for	**What** assumptions underpin projectile motion, **why** can motion be separated into horizontal and vertical components, and **how** can this be used to solve problems?	**What** makes a mathematical solution successful, **why** do examiners award marks in particular ways, and **how** can this improve performance?	

	What are secant, cosecant and cotangent, **why** are they important, and **how** are they related to the primary trigonometric functions? **How** do parametric equations provide an alternative way to represent functions, **why** is this useful, and **how** can we interpret their graphs? **How** can three dimensional vector methods be used to solve geometric and mechanics problems, and **why** are they effective mathematical models? **Why** are approximations sometimes necessary, and **how** can we locate roots efficiently?	differentiation reveal about relationships between variables, **why** are these methods important, and **how** can they be used? **What** is the relationship between differentiation and integration, **why** are they inverse processes, and **how** can this relationship help us analyse functions? **How** can advanced integration techniques and methods such as substitution, partial fractions and integration by parts simplify problems? **What** is a moment, **why** is rotational equilibrium important, and **how** can moments be used to solve mechanical problems?	equilibrium in mechanical systems, **why** do forces interact predictably, and **how** can we model connected particles and ladders? **How** can logarithmic methods and correlation measures reveal relationships in data, **why** is this important, and **how** can hypothesis testing support conclusions? **What** does the Normal distribution tell us about real-world data, **why** is it such a powerful model, and **how** can it be used to estimate probabilities and test hypotheses?	**How** can vectors and calculus be combined to model motion, **why** is this important, and **how** can these methods solve kinematics problems? **What** do set notation, Venn diagrams and tree diagrams reveal about probability, **why** are these representations useful, and **how** can they be used to calculate conditional probabilities?	**How** can past papers, mark schemes and examiner reports help identify strengths and areas for development? **Why** is examination technique important, and **how** can accuracy, communication and time management be improved?	
Assessment (specific assessed piece(s); milestone(s))	L Review P2-5 L Review P2-6&7 L Review P2-8 L Review P2-12	L Review P2-9 L Review P2-10 L Review M2-4 December exams	L Review P2-11 L Review M2-5 L Review M2-7 L Review S2-1	L Review S2-3 L Review S2-2 L Review M2-6 L Review M2-8 March exams	Past paper questions assessed weekly	