BEECHEN CLIFF

A level Maths

Curriculum Booklet

2025 - 2026

Head of Key Stage 5 Maths: Mr Henly

Subject Curriculum Intent

"Mathematics is not about numbers, equations, computations, or algorithms: it is about understanding."

William Paul Thurston

We aim to provide an outstanding, inclusive and inspirational environment so that all students have the opportunity to make fantastic progress. Mathematics is an essential tool to students looking to flourish in the modern world as well as being the gateway to a huge variety of further education pathways.

Over the 2 year course, our students will learn about a wide range of fundamental pure topics alongside the study of applied maths in the form of statistics and mechanics. This provides the students with a thorough grounding in the mathematics that they will need to move onto a variety of fields including Computer Science, Physics and Engineering. You will learn both standard techniques to solve problems in a variety of mathematical fields as well as problem solving techniques which can be applied to a greater range of challenges. The statistics you will learn will cross over with a host of other subjects where analysing data is key. In mechanics you will learn how to model a variety of real life situations, leading to a sound understanding of the underlying principles used in Physics and Engineering.

Beechen Cliff Sixth Form is rather unique in having a mixed sixth form and a boys-only lower school. Approximately half of our Sixth Form students come to us from a variety of contextually different secondary schools so we ensure that they settle in quickly. To acquire a useful body of knowledge, we test all students within the first few weeks to establish their individual strengths and areas that need immediate further support. As a high proportion of students arrive with high levels of prior attainment we are very much focussed on extending and challenging them throughout their time here.

We want all of our students to have the option to study Mathematics at a higher level and guide our students throughout the course on the pathways to further education that their study could take them. Over a third of our students regularly progress to mathematical-related courses in highly selective Russell Group Universities. We run dedicated support for entrance assessments to the top universities in the country through our Oxbridge STEM group.

We keep an up to date reading list of recommended mathematical literature and are lucky to have a highly skilled mathematical team that are willing and able to talk beyond the curriculum. We welcome mathematical speakers to provide super curricular talks beyond the curriculum and in recent years have had talks on topology, the mathematics of pandemics and types of infinity.

Over the two year course, pupils will receive outstanding levels of support, challenge and guidance and will leave ready to take on the next chapter of their lives, well informed and ready to flourish in their future careers.

Subject Curriculum Implementation

The scheme of work is split between two teachers, with one teacher covering all of statistics and the other all of mechanics. The scheme of work is sequenced in a deliberate way such that the same teacher covers any repeating or overlapping topics that appear in both AS and A2, any prerequisite knowledge for a chapter is covered in time and both teachers will finish the AS and A2 chapters at a similar time to accommodate effective revision periods.

Our teachers use a variety of methods to ensure effective teaching of the syllabus, such as modelling worked examples on the board, facilitating whole class discussions, posing specific questions, purposefully highlighting common mistakes and misconceptions, and sharing their unique tips and tricks for tackling questions with problem-solving elements. Additionally, our teachers are experts in using Google Classroom and other online resources ensuring that high quality online learning will take place to supplement and enrich the curriculum.

We cater for any student who meets our entry requirement and with the introduction of the monitoring programme in 2021, we identify and target those students who are struggling from the very beginning to ensure they have the support they need to be successful. Soon after they start the course, students sit AS preparatory assessments. This is for two reasons – firstly, it gives them a flavour of what the course will entail, as well as a good idea of the jump up from GCSE to A-level maths, and secondly, it gives us clear information about which students are going to need some extra help. Students who score less than 40% on these assessments will be put onto the monitoring programme. Any students on this programme will be expected to attend after-school Tuesday sessions, at which they can work on any maths they like with some guidance from at least two attending teachers. Students remain on this programme until they score above 40% on a series of future assessments, at which point they will have demonstrated enough progress that we can turn our attention to others who are now in more need of support.

Our students are given the chance to reflect on their progress as they complete formal assignments and assessments throughout the course, with one of each per teacher per half term. The detailed feedback given to the students on these tasks enables them to identify areas of strength, as well as areas of weakness for them to target during their revision. It also gives the teacher an excellent idea of which topics that have been taught need the most extra attention during lesson time. This continual process culminates in two separate formal mock exam periods, followed by their official exams in Year 13.

Allocated Curriculum Time:

	Lower Sixth	**Upper Sixth**
Fortnightly lesson allocation	8 hours	8 hours

Course Information

Exam Board: Edexcel
Specification: 9MA0

Lower Sixth

Term	Curriculum Foci Areas	Assessments
1	**<u>Teacher 1 Topics</u> (Teaching of Pure to start)** Chapter 1 – Algebraic Expressions Chapter 5 – Straight Line Graphs Chapter 6 – Circles **<u>Teacher 2 Topics</u> (Teaching of Pure to start)** Chapter 2 – Quadratics Chapter 3 – Equations and Inequalities Chapter 4 – Graphs and Transformations	AS preparation assessment in the first week Formal assignment from both teachers (homework to be handed in)
2	**<u>Teacher 1 Topics</u>** Chapter 7 – Algebraic Methods Chapter 8 – The Binomial Expansion Chapter 12 – Differentiation **<u>Teacher 2 Topics</u>** Chapter 9 – Trigonometric Ratios Chapter 10 – Trigonometric Identities and Equations	Assessment from both teachers
3	**<u>Teacher 1 Topics</u>** Chapter 12 – Differentiation Chapter 13 – Integration **<u>Teacher 2 Topics</u>** Chapter 11 – Vectors Chapter 14 – Exponentials and Logarithms	Assessment and formal assignment from both teachers
4	**<u>Teacher 1 Topics</u> (Teaching of Statistics to start)** Chapter 1 – Data Collection Chapter 2 – Measures of Location and Spread Chapter 3 – Representations of Data Chapter 4 – Correlation **<u>Teacher 2 Topics</u> (Teaching of Mechanics to start)** Chapter 8 – Modelling in Mechanics Chapter 9 – Constant Acceleration Chapter 10 – Forces and Motion	Formal Mock from both teachers

5	**<u>Teacher 1 Topics</u>** Chapter 5 - Probability Chapter 6 – Statistical Distributions **<u>Teacher 2 Topics</u>** Chapter 11 – Variable Acceleration	Formal Mock from both teachers
6	**<u>Teacher 1 Topics</u>** Chapter 7 – Hypothesis Testing Chapter 1 – Algebraic Methods (Teaching of A2 Pure to start) **<u>Teacher 2 Topics</u>** Chapter 5 – Radians (Teaching of A2 Pure to start) Chapter 2 – Functions and Graphs	Formal assignment from both teachers

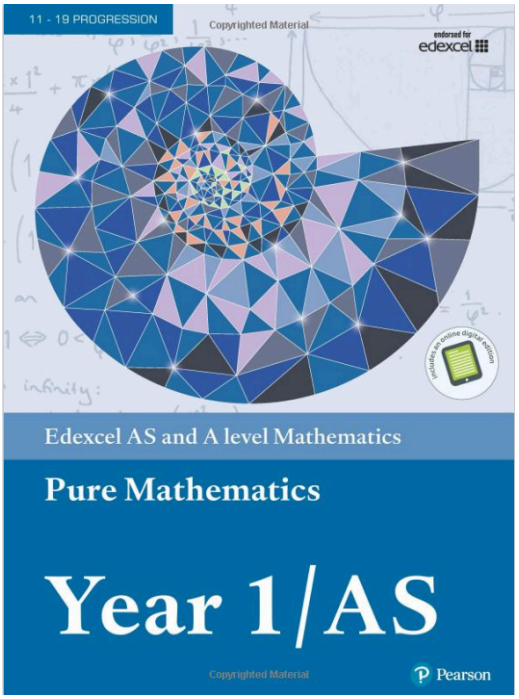
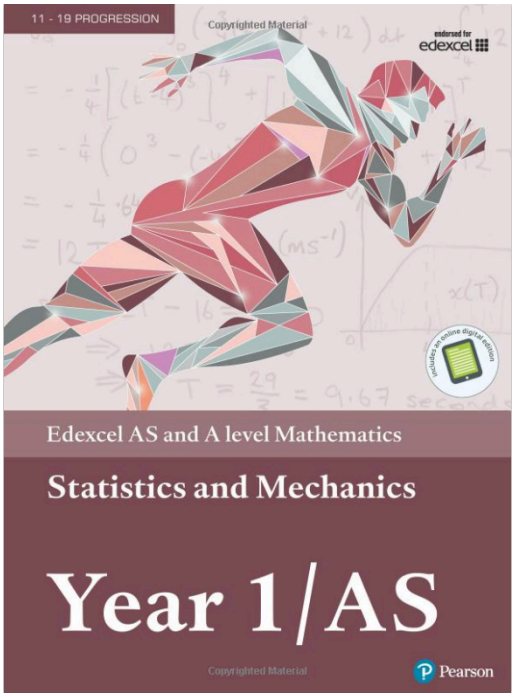
Upper Sixth

Term	Curriculum Foci Areas	Assessments
1	**Teacher 1 Topics** Chapter 3 – Sequences and Series Chapter 4 – Binomial Expansions Chapter 9 – Differentiation **Teacher 2 Topics** Chapter 6 – Trigonometric Functions Chapter 7 – Trigonometry and Modelling Chapter 8 – Parametric Equations	Assessment and formal assignment from both teachers
2	**Teacher 1 Topics** Chapter 9 – Differentiation Chapter 11 – Integration **Teacher 2 Topics** Chapter 8 – Parametric Equations Chapter 10 – Numerical Methods Chapter 12 – Vectors	Formal Mock from both teachers
3	**Teacher 1 Topics** Chapter 11 – Integration Chapter 1 – Regression, Correlation and Hypothesis Testing (A2 Stats) **Teacher 2 Topics** Chapter 4 – Moments (A2 Mechanics) Chapter 5 – Forces and Friction	Formal assignment from both teachers
4	**Teacher 1 Topics** Chapter 2 – Conditional Probability Chapter 3 – The Normal Distribution **Teacher 2 Topics** Chapter 5 – Forces and Friction Chapter 6 - Projectiles Chapter 7 – Applications of Forces	Formal Mock from both teachers
5	**Teacher 1 Topics** Revision **Teacher 2 Topics** Chapter 8 – Further Kinematics Revision	Revision Programme
6	**Study leave and exams**	

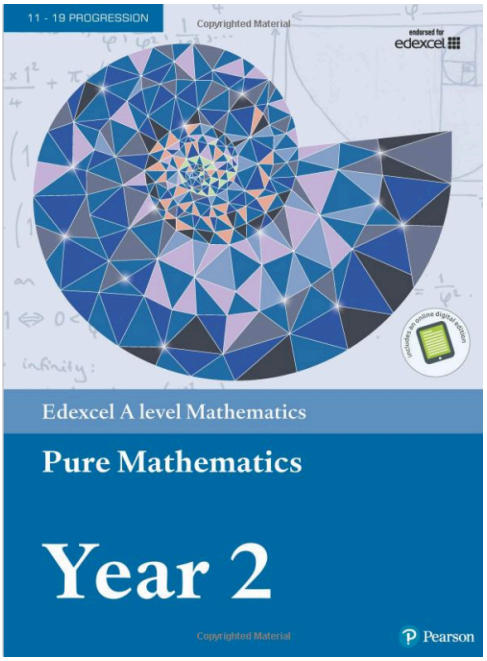
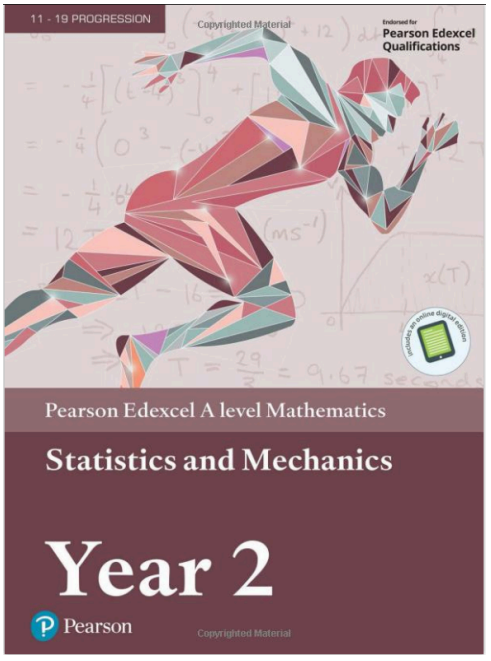
Aspiration Compassion Independence Respect

Required Textbooks

Year one

Textbook information	Front cover image
Edexcel AS and A level Mathematics Pure Mathematics Year 1/AS	
Edexcel AS and A level Mathematics Statistics and Mechanics Year 1/AS	

Year two

Textbook information	Front cover image
Edexcel AS and A level Mathematics **Pure Mathematics** **Year 2**	
Edexcel AS and A level Mathematics **Statistics and Mechanics** **Year 2**	

These textbooks can be bought **<u>brand new</u>** through the school's ParentPay system, with a bulk discounted price. Alternatively, students may wish to source their own brand new or second hand copies (e.g. from Amazon).

Studying/Revision Information

To be successful studying A-level Maths, students must consistently demonstrate many qualities. Among other things, they must be ambitious, diligent, resilient, resourceful and reflective. Even for the brightest students, the jump from GCSE to A-level Maths can be a startling one, and starting the course with the determination to overcome obstacles and desire to achieve is essential. Below is a non-exhaustive list of actions that students should take during their studies to give them the very best chance of success:

- Spend **at least** 4 hours per week doing maths outside of lessons – e.g. set homework, textbook questions, revision, test corrections, watching videos or studying notes
- Take careful notes during lessons – this includes key points, worked examples, diagrams, attempted exam questions or even individual notes to aid memory
- Take formal assignments seriously – these are a direct reflection of what you have learned, so take the necessary time to ensure they are up to your highest standard
- Organise folders effectively – have one folder to bring to lessons with all the work from the current units of study, and one at home with all past notes to refer to
- Maximise learning during lessons – listen carefully to explanations, ask questions during and after teaching time, use classmates to share ideas with
- Regularly attend after school sessions – these sessions are on a Tuesday from 3:30pm to 4:30pm in the maths rooms, and all sixth form maths students are welcome
- Use assessments as a tool for learning – students will be able to identify topics of weakness after an assessment, and should use this knowledge to target their revision

Revision

Throughout the course, students will sit many assessments in order for them to identify topics that need extra work, as previously mentioned. It is therefore important that students are well equipped for these, and this comes down to effective revision. This should include focusing on less confident topics first, revisiting notes and examples, and most importantly tackling plenty of exam-style questions to develop understanding and ensure fluency. Class teachers will provide students with specific information about each assessment in advance.

Useful resources:

- Head Start to A-level Maths by CGP – supporting textbook
- A-level Mathematics Complete Revision and Practice by CGP – revision guide
- A-level Mathematics Exam Practice Workbook by CGP – revision workbook
- Pearson Active Learn – online textbook website
- Maths Genie – website for exam questions
- MadAsMaths – website for (tough) exam questions
- Physics and Maths Tutor – website for worked solutions
- Crash Maths – website for practice papers
- Nakier Maths – website for practice papers
- TLMaths – website for videos

Final Assessment Structure:

Component	Weight	Content	Proposed Examination Date
Paper 1: Pure 1 **[2 hours]**	**33.33%**	Topic 1 - Proof Topic 2 – Algebra and Functions Topic 3 – Coordinate Geometry Topic 4 – Sequences and Series Topic 5 – Trigonometry Topic 6 – Exponentials and Logarithms Topic 7 – Differentiation Topic 8 – Integration Topic 9 – Numerical Methods Topic 10 – Vectors	**May/June**
Paper 2: Pure 2 **[2 hours]**	**33.33%**	Topic 1 - Proof Topic 2 – Algebra and Functions Topic 3 – Coordinate Geometry Topic 4 – Sequences and Series Topic 5 – Trigonometry Topic 6 – Exponentials and Logarithms Topic 7 – Differentiation Topic 8 – Integration Topic 9 – Numerical Methods Topic 10 – Vectors	**May/June**
Paper 3: Stats and Mechanics **[2 hours]**	**33.33%**	**Section A: Statistics** Topic 1 – Statistical Sampling Topic 2 – Data Presentation and Interpretation Topic 3 – Probability Topic 4 – Statistical Distributions Topic 5 – Statistical Hypothesis Testing **Section B: Mechanics** Topic 6 – Quantities and Units Topic 7 - Kinematics Topic 8 – Forces and Newton's Laws Topic 9 – Moments	**May/June**

Please see Exam Board websites for up to date information:
https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html