Cornwallis Academy
Ambitions for All

SMILE
SUCCESSFUL | MOTIVATED | INSPIRED | LEARNING | EXCITED & ENGAGED

Mathematics

Curriculum Intent

The aims and objectives of this qualification are to enable students to:
● understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment and provides a strong foundation for progress to further study
● extend their range of mathematical skills and techniques
● understand coherence and progression in mathematics and how different areas of mathematics are connected ● apply mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general
● use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts, and communicate the mathematical rationale for these decisions clearly
● reason logically and recognise incorrect reasoning
● generalise mathematically
● construct mathematical proofs
● use their mathematical skills and techniques to solve challenging problems that require them to decide on the solution strategy
● recognise when mathematics can be used to analyse and solve a problem in context
● represent situations mathematically and understand the relationship between problems in context and mathematical models that may be applied to solve them
● draw diagrams and sketch graphs to help explore mathematical situations and interpret solutions
● make deductions and inferences and draw conclusions by using mathematical reasoning
● interpret solutions and communicate their interpretation effectively in the context of the problem
● read and comprehend mathematical arguments, including justifications of methods and formulae, and communicate their understanding
● read and comprehend articles concerning applications of mathematics and communicate their understanding
● use technology such as calculators and computers effectively and recognise when their use may be inappropriate
● take increasing responsibility for their own learning and the evaluation of their own mathematical development.

Assessment, Marking and Feedback

During year 12 students will sit a set of PPE exams in March. These will be used to guide next steps.
During year 13, students will sit two sets of PPE exams, one in November the following in March. These will be used to guid next steps.
Throughout the course, there will assessments after each chapter has been taught to identify and resolve any gaps in learning before moving onto the next chapter.

Homework

All students are set weekly assignments on teams. Students are also expected to complete exam papers weekly in preparation of upcoming exams.

Links to National Curriculum / Syllabus Specifications

A level Mathematics Specification

Exam Support & Revision Resources

- Tutorial videos for all topics and interactive questions available at www.hegartymaths.com. All students provided with an account
- Tutorial videos and practice exam questions available at https://www.mathsgenie.co.uk/newalevel.html
- Practice papers with accompanying mark schemes and video solutions available at https://www.mathsgenie.co.uk/alevelpapers.html

- Electronic copies of the textbooks and additional resources available at https://www.pearsonactivelearn.com/app/home (login details provided upon purchase of textbook)

Extracurricular and Enrichment Opportunities

Afterschool sessions are on offer to all our KS5 students, as well as additional revision sessions which run during the Easter break.
Students can contact staff via Teams to get support when working independently.
We enter our A-Level students for the UKMT Senior Maths Challenge.

Interested to know more?

To read:

- *Fermat's Last Theorem* – Simon Singh (story of one of the most famous problems in maths)
- *Alex's Adventures in Numberland* – Alex Bellos (fun real-world maths ideas)
- *The Hidden Reality of Maths* – Marcus du Sautoy (how maths shapes the world)
- *How Not to Be Wrong* – Jordan Ellenberg (how maths applies to everyday decisions)

To watch:

- 3Blue1Brown – amazing visual explanations of calculus, vectors, and probability
- Numberphile – interesting maths concepts and famous problems
- Mathsaurus – directly relevant to Edexcel A Level topics
- ExamSolutions – very useful for revision and method practice

To listen:

- *My Favourite Theorem* – mathematicians talk about their favourite ideas
- *The Infinite Monkey Cage* – science and maths with humour
- *Breaking Math* – explores interesting mathematical ideas
- BBC podcasts on maths and science topics (often cover statistics and real-world modelling)

To visit:

- The Science Museum (London) – mechanics, engineering, and applied maths in real systems
- The Royal Institution (London) – public lectures and demonstrations
- The Alan Turing Institute events (data science and AI talks)
- Mathematics exhibitions at the Science Gallery (London or travelling exhibits)