KING EDWARD VI
HANDSWORTH GRAMMAR
SCHOOL FOR BOYS

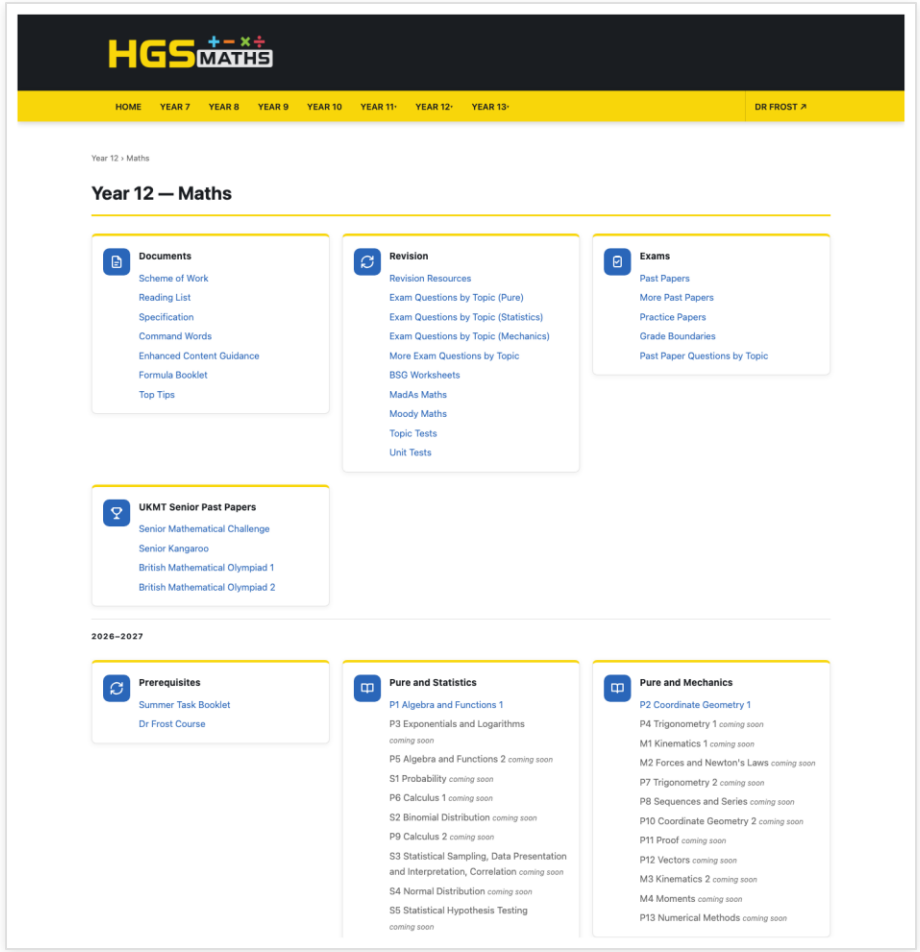
KING EDWARD VI
ACADEMY TRUST
BIRMINGHAM

HGS MATHS

START OF YEAR INFORMATION
YEARS 12 AND 13

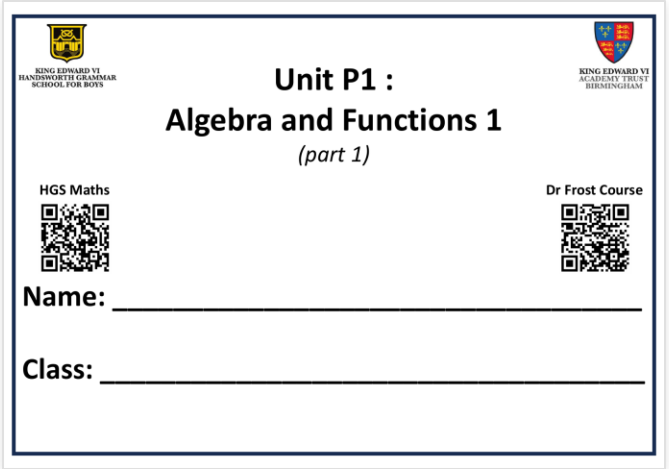
SUMMER WORK

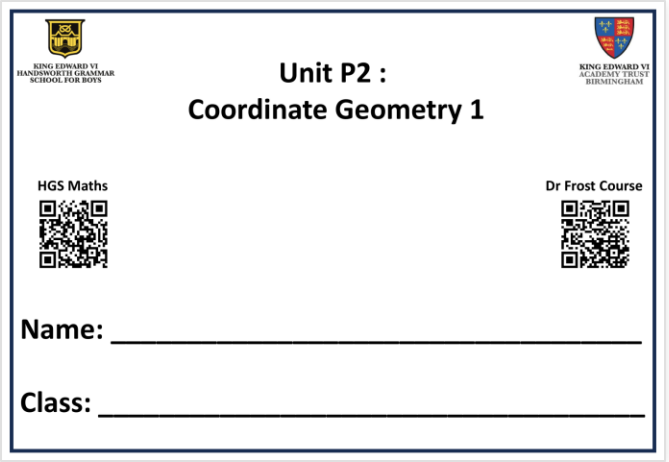
- You should have **completed the summer task booklet**. Remember, you will have a **baseline assessment** on this content which will be during CA1 on **MONDAY 21st SEPTEMBER**
- If you haven't got a copy of the booklet or have lost it, you will need to get another one. **The booklet can be accessed on the HGS Maths website.**



STUDENT BOOKLETS

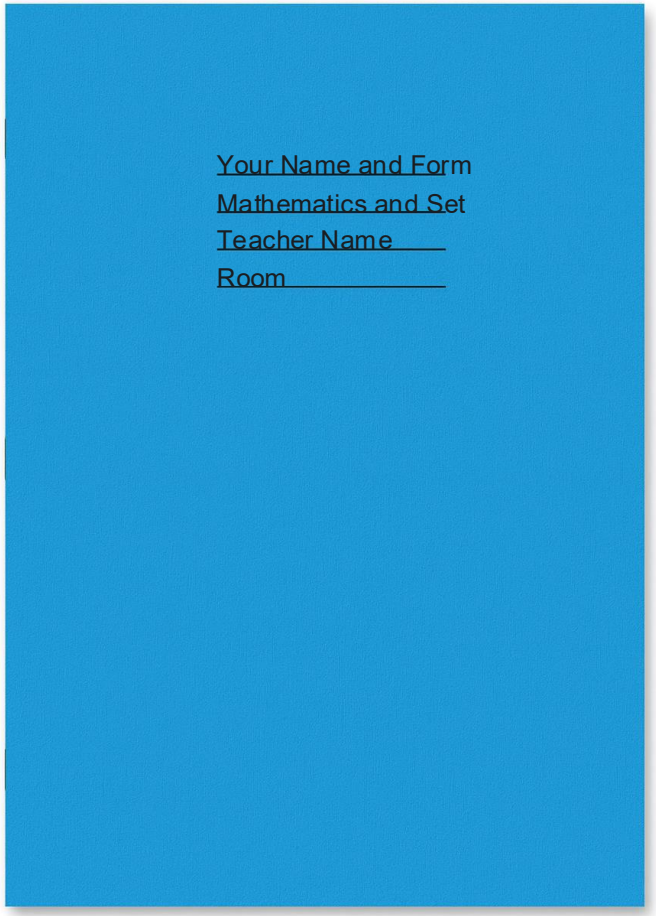
- All notes and examples will be completed in printed booklets.
- You must keep your booklets neat and up to date.
- **You will take the booklet home and must bring it to every lesson.**
- It is recommended that you buy a folder to keep these in, as well as any other paper or worksheets printed for you.
- An electronic version of the booklets will be available on your **OneNote Class Notebook** so you can stay up to date.





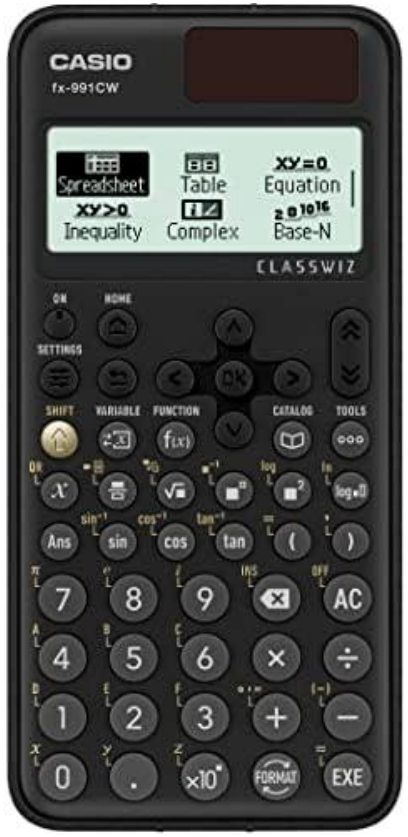
EXERCISE BOOK

- This is your book for all classwork, and you should keep it neat.
- All **classwork** is done at the **front** of the book.
- All marking is done through self-assessment or peer assessment.
- You should always include:
  - **Dates**
  - **Headings**
  - **Margins**
- **You must take this book home and bring it to every lesson.**



EQUIPMENT

- You must bring the following equipment to every lesson, along with your exercise book:
  - **Two pens (ideally black)**
  - **One red or green pen**
  - **Pencil**
  - **Ruler**
  - **Sharpener**
  - **Eraser**
  - **Mini whiteboard pen**
  - **Calculator (Casio fx-991CW)**
- The calculator can be purchased from the school – details will be posted on Microsoft Teams.



FAKE CALCULATORS

- Fake **Casio** calculators are being sold online.
- They look and feel real – but give wrong answers.

How to Buy Safely:

- Buy from school – it's cheaper and guaranteed genuine.
- Or buy from trusted shops like Tesco, Asda, or WHSmith.
- If using Amazon, only buy direct from Casio or "Sold by Amazon" (not third-party sellers).

HOMEWORK

Learning is a lasting change in your long-term memory – and thinking is what causes that change.

- Homework gives you the extra thinking and practice that makes what you learn in lessons stick.
- Two homework tasks a week, both recorded on Arbor. Most are set online using Dr Frost; sometimes you are given a paper task instead.

What good homework does for you

- **Makes you think.** The effort is the point – that's what moves knowledge into long-term memory.
- **Builds independence.** Learning to work on your own, outside lessons, is a skill for life.
- **Gives you the reps.** Real mastery comes from many repetitions, not one attempt.
- **Creates success.** Small wins build confidence – and confidence makes you want to do more.

What we're not interested in

- **Busy work** with no clear purpose.
- **Chores** done just to tick a box.
- **Forgettable tasks** that leave no trace a week later.
- **Fake progress** – copied or AI-generated answers. "Done" doesn't mean you've learned it, and the mini-test will show that.

1 Struggle the right way

Wrestling with a problem builds memory – but retrying the same thing that is not working just rehearses confusion. Effort only helps if it is the right kind.

2 Know when to ask

Tried two or three approaches and all stalled? That's the moment to ask – not a failure. We run drop-in sessions at break; copying is never the answer.

3 Expect a check

You need to know if it has stuck – so we'll check in lessons. Treat it as feedback on what to work on next.

WHAT IS AND IS NOT CHEATING

This is not cheating

- Looking up the answer in the back of the book to check you have answered the question correctly **is not cheating.**
- Asking a friend how to solve a problem **is not cheating.**
- Using a calculator to check your work **is not cheating.**
- Using AI to show you a step-by-step method so that you can then do other similar problems yourself **is not cheating.**

Cheating is when you pretend you understand when you really don't.

That's when you are cheating yourself.

GOOD HABITS AT HOME

To succeed in maths, you need good habits at home:

- **Get enough sleep**
  Aim for 8–10 hours – your brain needs rest to focus and learn.
- **Avoid distractions**
  Do homework somewhere quiet, without phones or games.
- **Use technology wisely**
  Tools like ChatGPT can explain topics clearly, but you must try the work yourself first.
- **Build a routine**
  Set a regular study time each day. A little every day is better than cramming.

IF YOU MISS A LESSON

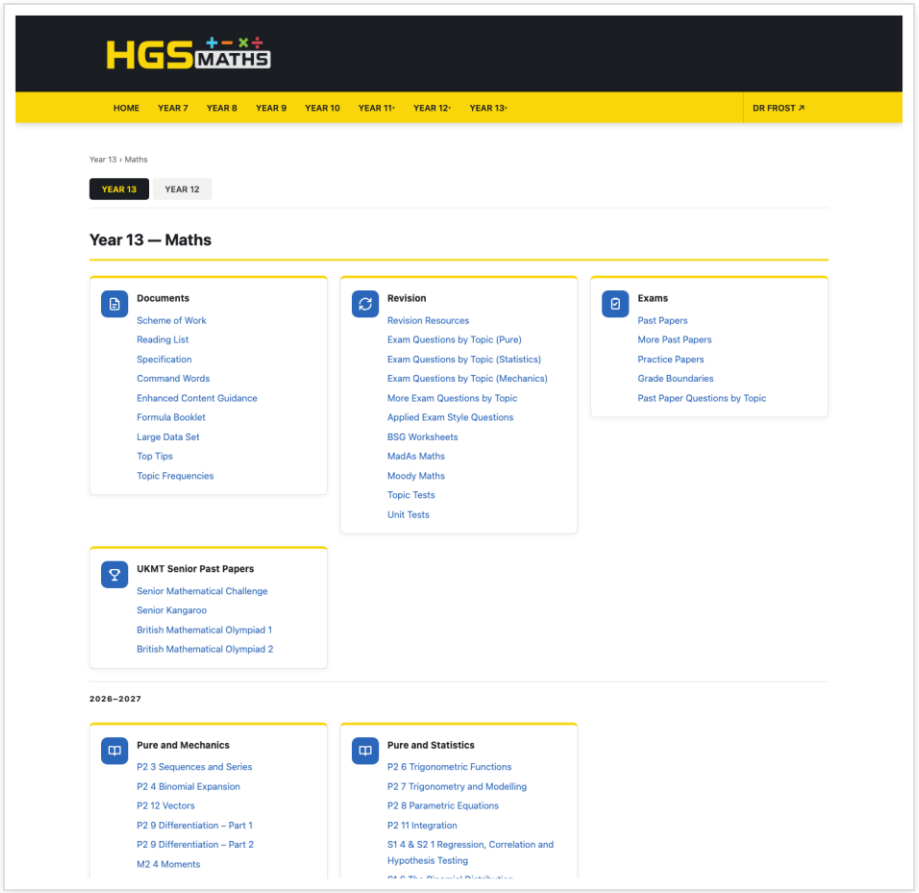
- Everything you need is on your year page at hgsmaths.com: the booklet, the tasks, and the knowledge organiser.
- Go through the notes and examples you missed in your own time.
- Work through the questions you missed, so the gap does not follow you into the next unit.
- Ask your teacher about anything you cannot follow from the booklet on its own.
- **Do not wait to be chased. Catching up is your job, and we will help you do it.**

HOMEWORK DEADLINES STILL STAND

If you were away when a homework was set, it will still be on Arbor. Check it as soon as you are back, and speak to your teacher straight away if you genuinely need more time.

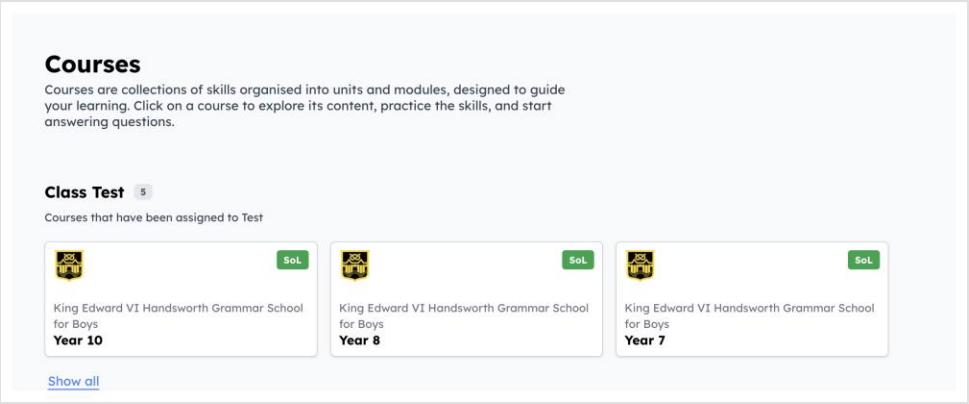
WEBSITE

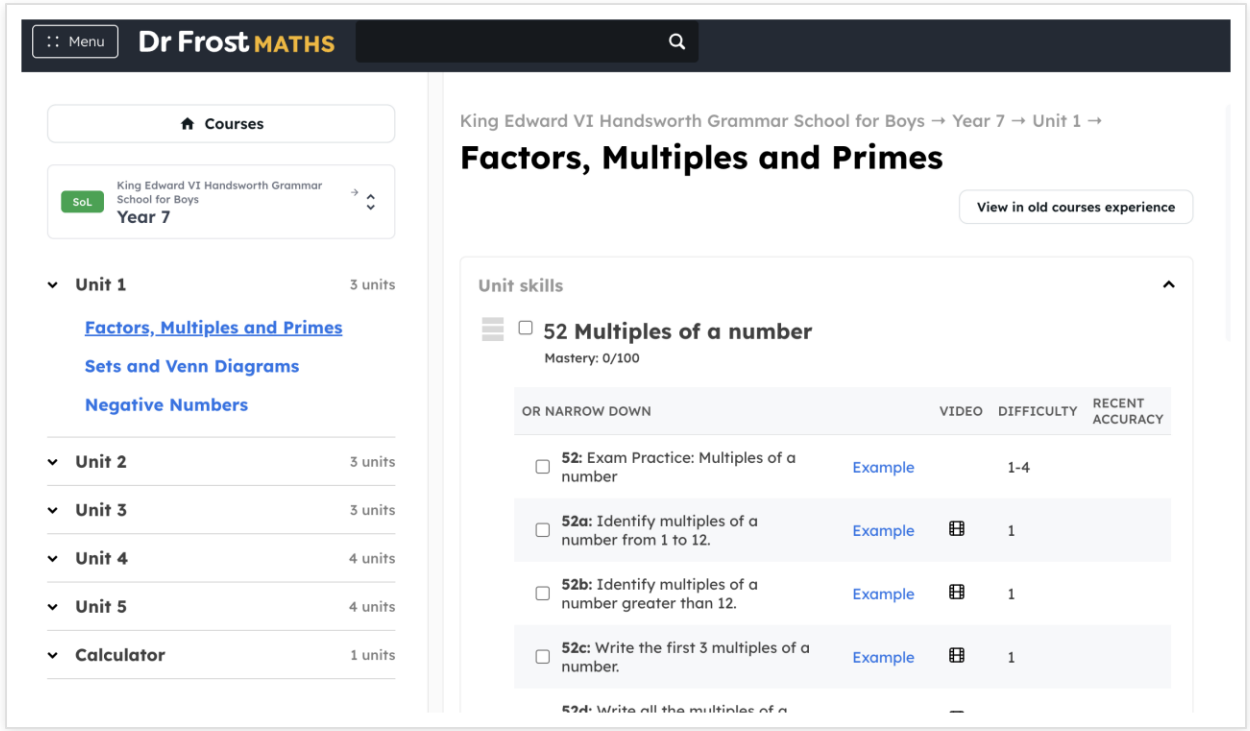
- The documents section contains the **scheme of work, reading list, specification and formula booklet.**
- The revision section contains resources with links to **PowerPoints, videos, questions by topic, and practice papers**. It also includes **BSG worksheets, topic tests, and unit tests** for you to use.
- The exams section contains all **past papers and practice papers**.
- Under **Revision**, **questions by topic** is the best place to start for past paper practice.
- The booklets can be accessed using the links in the boxes at the bottom of the page.



DR FROST – OUR CURRICULUM

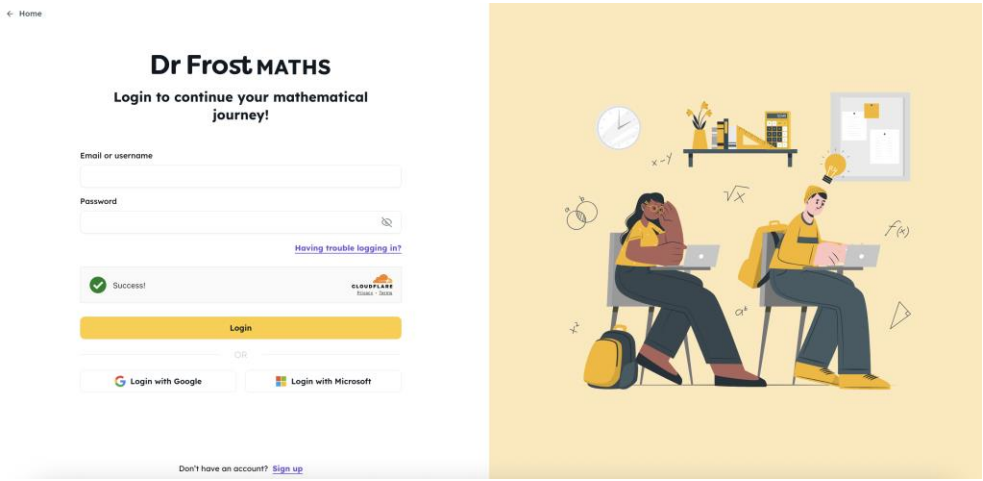
- **We have uploaded our curriculum to Dr Frost** so you can easily complete independent work based on what you have covered in lessons.
- In each course, you can **click into the unit and topic you want to practise, and complete key skills or exam-style questions**.





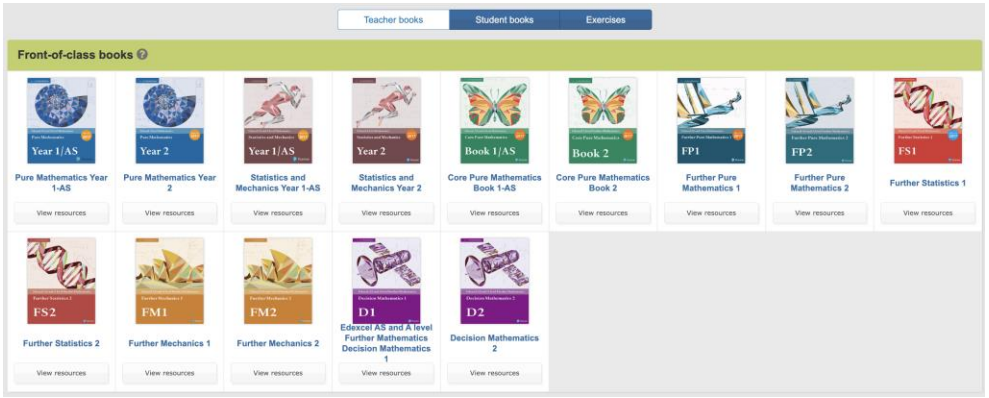
DR FROST – EXTERNAL STUDENTS

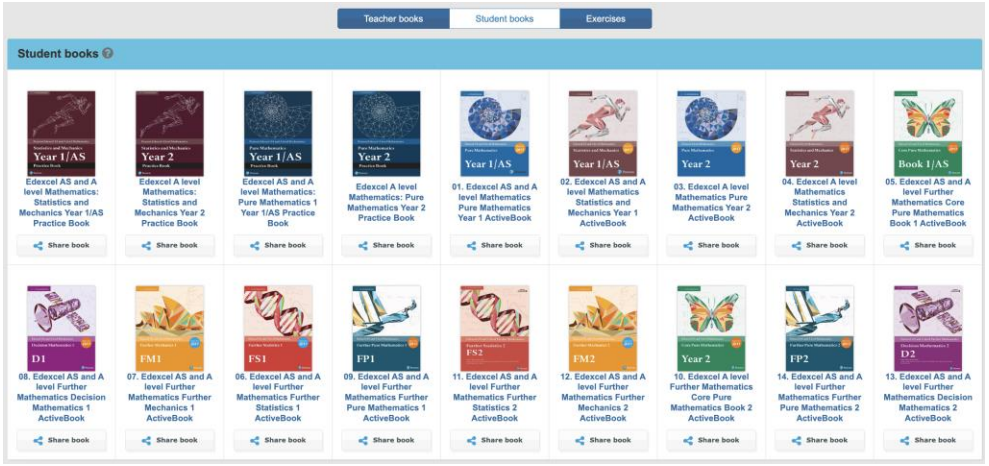
- Your **username is your school email address**.
- Your **default password is "password"** (you can change this later).
- If you forget your password, click the 'Forgotten your password?' link on the login page.



ACTIVE LEARN

- You will find your online A level textbooks here.
- Extra practice books are available under the **Student Books** tab.
- Login details will be provided soon.



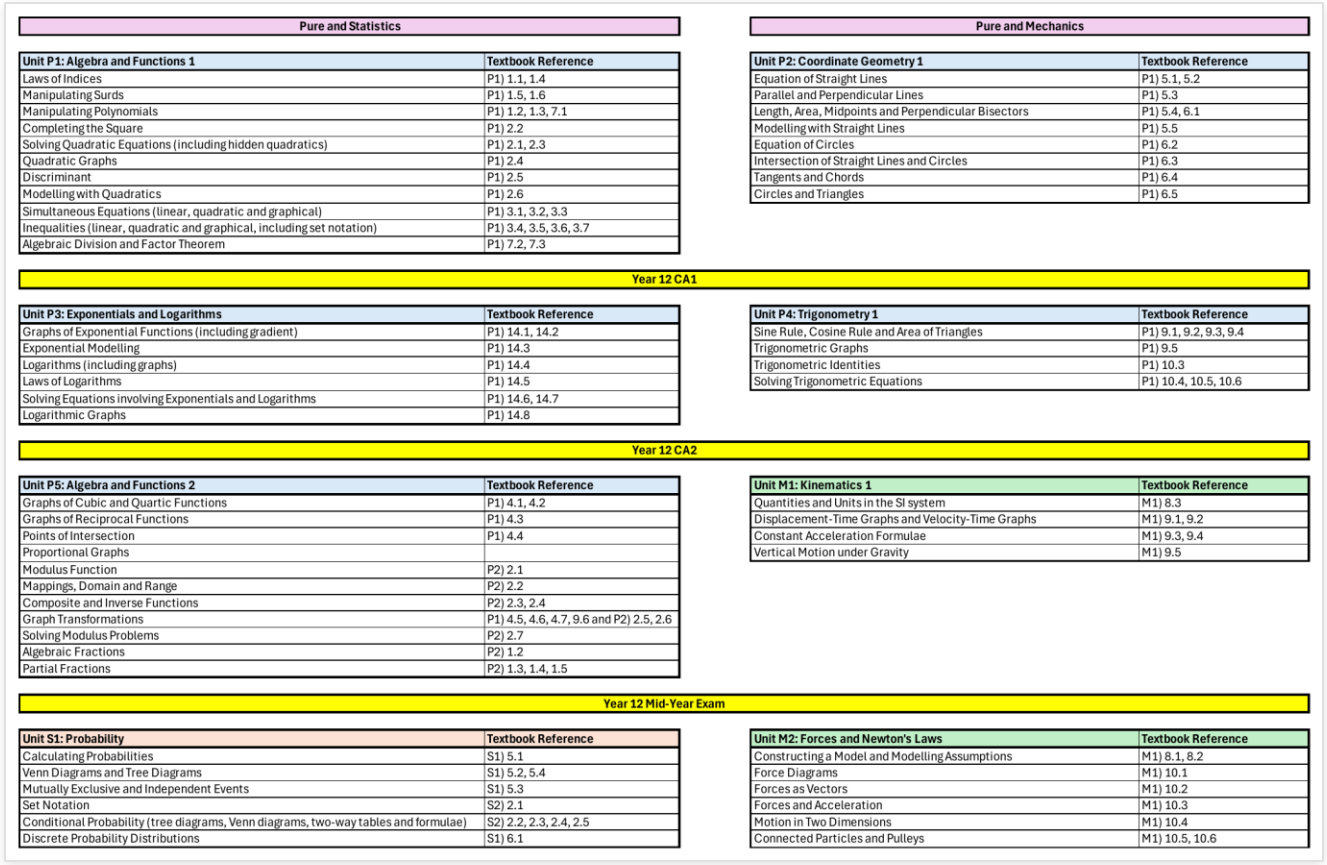


ASSESSMENTS

- You will complete **entrance and exit tickets in class** to check your understanding of current or previous work.
- You will also have **formal assessments throughout the year.**
- There will be a **separate end-of-year exam**.

SCHEME OF WORK

- Pure is taught alongside **Mechanics** and **Statistics** in parallel, with the yellow bands marking each assessment. This is the first page – the full scheme of work is on your year page on the website.



Pure and Statistics

Unit P1: Algebra and Functions 1	Textbook Reference
Laws of Indices	P1) 1.1, 1.4
Manipulating Surds	P1) 1.5, 1.6
Manipulating Polynomials	P1) 1.2, 1.3, 7.1
Completing the Square	P1) 2.2
Solving Quadratic Equations (including hidden quadratics)	P1) 2.1, 2.3
Quadratic Graphs	P1) 2.4
Discriminant	P1) 2.5
Modelling with Quadratics	P1) 2.6
Simultaneous Equations (linear, quadratic and graphical)	P1) 3.1, 3.2, 3.3
Inequalities (linear, quadratic and graphical, including set notation)	P1) 3.4, 3.5, 3.6, 3.7
Algebraic Division and Factor Theorem	P1) 7.2, 7.3

Pure and Mechanics

Unit P2: Coordinate Geometry 1	Textbook Reference
Equation of Straight Lines	P1) 5.1, 5.2
Parallel and Perpendicular Lines	P1) 5.3
Length, Area, Midpoints and Perpendicular Bisectors	P1) 5.4, 6.1
Modelling with Straight Lines	P1) 5.5
Equation of Circles	P1) 6.2
Intersection of Straight Lines and Circles	P1) 6.3
Tangents and Chords	P1) 6.4
Circles and Triangles	P1) 6.5

Year 12 CA1

Unit P3: Exponentials and Logarithms	Textbook Reference
Graphs of Exponential Functions (including gradient)	P1) 14.1, 14.2
Exponential Modelling	P1) 14.3
Logarithms (including graphs)	P1) 14.4
Laws of Logarithms	P1) 14.5
Solving Equations involving Exponentials and Logarithms	P1) 14.6, 14.7
Logarithmic Graphs	P1) 14.8

Unit P4: Trigonometry 1	Textbook Reference
Sine Rule, Cosine Rule and Area of Triangles	P1) 9.1, 9.2, 9.3, 9.4
Trigonometric Graphs	P1) 9.5
Trigonometric Identities	P1) 10.3
Solving Trigonometric Equations	P1) 10.4, 10.5, 10.6

Year 12 CA2

Unit P5: Algebra and Functions 2	Textbook Reference
Graphs of Cubic and Quartic Functions	P1) 4.1, 4.2
Graphs of Reciprocal Functions	P1) 4.3
Points of Intersection	P1) 4.4
Proportional Graphs	
Modulus Function	P2) 2.1
Mappings, Domain and Range	P2) 2.2
Composite and Inverse Functions	P2) 2.3, 2.4
Graph Transformations	P1) 4.5, 4.6, 4.7, 9.6 and P2) 2.5, 2.6
Solving Modulus Problems	P2) 2.7
Algebraic Fractions	P2) 1.2
Partial Fractions	P2) 1.3, 1.4, 1.5

Unit M1: Kinematics 1	Textbook Reference
Quantities and Units in the SI system	M1) 8.3
Displacement-Time Graphs and Velocity-Time Graphs	M1) 9.1, 9.2
Constant Acceleration Formulae	M1) 9.3, 9.4
Vertical Motion under Gravity	M1) 9.5

Year 12 Mid-Year Exam

Unit S1: Probability	Textbook Reference
Calculating Probabilities	S1) 5.1
Venn Diagrams and Tree Diagrams	S1) 5.2, 5.4
Mutually Exclusive and Independent Events	S1) 5.3
Set Notation	S2) 2.1
Conditional Probability (tree diagrams, Venn diagrams, two-way tables and formulae)	S2) 2.2, 2.3, 2.4, 2.5
Discrete Probability Distributions	S1) 6.1

Unit M2: Forces and Newton's Laws	Textbook Reference
Constructing a Model and Modelling Assumptions	M1) 8.1, 8.2
Force Diagrams	M1) 10.1
Forces as Vectors	M1) 10.2
Forces and Acceleration	M1) 10.3
Motion in Two Dimensions	M1) 10.4
Connected Particles and Pulleys	M1) 10.5, 10.6

SCHEME OF WORK

- The second year of the course, with Pure taught alongside **Mechanics** and **Statistics**. Chapter references are to your Pearson textbooks.

Year 13

Teacher 1 - Pure and Mechanics	
Pure 2 Chapter 3 - Sequences and Series	3.1 - 3.8
Pure 2 Chapter 4 - Binomial Expansion	4.1 - 4.3
Pure 2 Chapter 12 - Vectors	12.1 - 12.4
Pure 2 Chapter 9 - Differentiation	9.1 - 9.10
Mechanics 2 Chapter 4 - Moments	4.1 - 4.5
Mechanics 2 Chapter 6 - Projectiles	6.1 - 6.4
Mechanics 2 Chapter 7 - Applications of Forces	7.1 - 7.6
Mechanics 2 Chapter 8 - Further Kinematics	8.1 - 8.5
Pure 2 Chapter 10 - Numerical Methods	10.1 - 10.4

Teacher 2 - Pure and Statistics	
Pure 2 Chapter 6 - Trigonometric Functions	6.1 - 6.5
Pure 2 Chapter 7 - Trigonometry and Modelling	7.1 - 7.7
Pure 2 Chapter 8 - Parametric Equations	8.1 - 8.5
Pure 2 Chapter 11 - Integration	11.1 - 11.11
Statistics 1 and Statistics 2 Chapter 4 - Correlation and Chapter 1 - Regression, Correlation and Hypothesis Testing	S1 4.1 - 4.2 & S2 1.1 - 1.3
Statistics 1 Chapter 6 - The Binomial Distribution	6.2 - 6.3
Statistics 2 Chapter 3 - The Normal Distribution	3.1 - 3.7
Statistics 1 Chapter 7 - Hypothesis Testing	7.1 - 7.4
Statistics 1 Chapter 1 - Data Collection (Large Data Set)	1.1 - 1.3 & 1.5

A LEVEL MATHEMATICS

- Exam board: **Edexcel**.
- You will sit three papers at the end of Year 13:
  - **Paper 1: Pure Mathematics 1**
  - **Paper 2: Pure Mathematics 2**
  - **Paper 3: Statistics and Mechanics**
- Each paper is **2 hours**, worth **100 marks**.
- All papers are **calculator papers**.
- A **formula booklet** will be provided in the exam.

A LEVEL FURTHER MATHEMATICS

- Exam board: **Edexcel**.
- You will sit four papers at the end of Year 13:
  - **Paper 1: Core Pure Mathematics 1**
  - **Paper 2: Core Pure Mathematics 2**
  - **Paper 3: Further Pure Mathematics 1**
  - **Paper 4: Further Pure Mathematics 2**
- Each paper is **1 hour 30 minutes**, worth **75 marks**.
- All papers are **calculator papers**.
- A **formula booklet** will be provided in the exam.

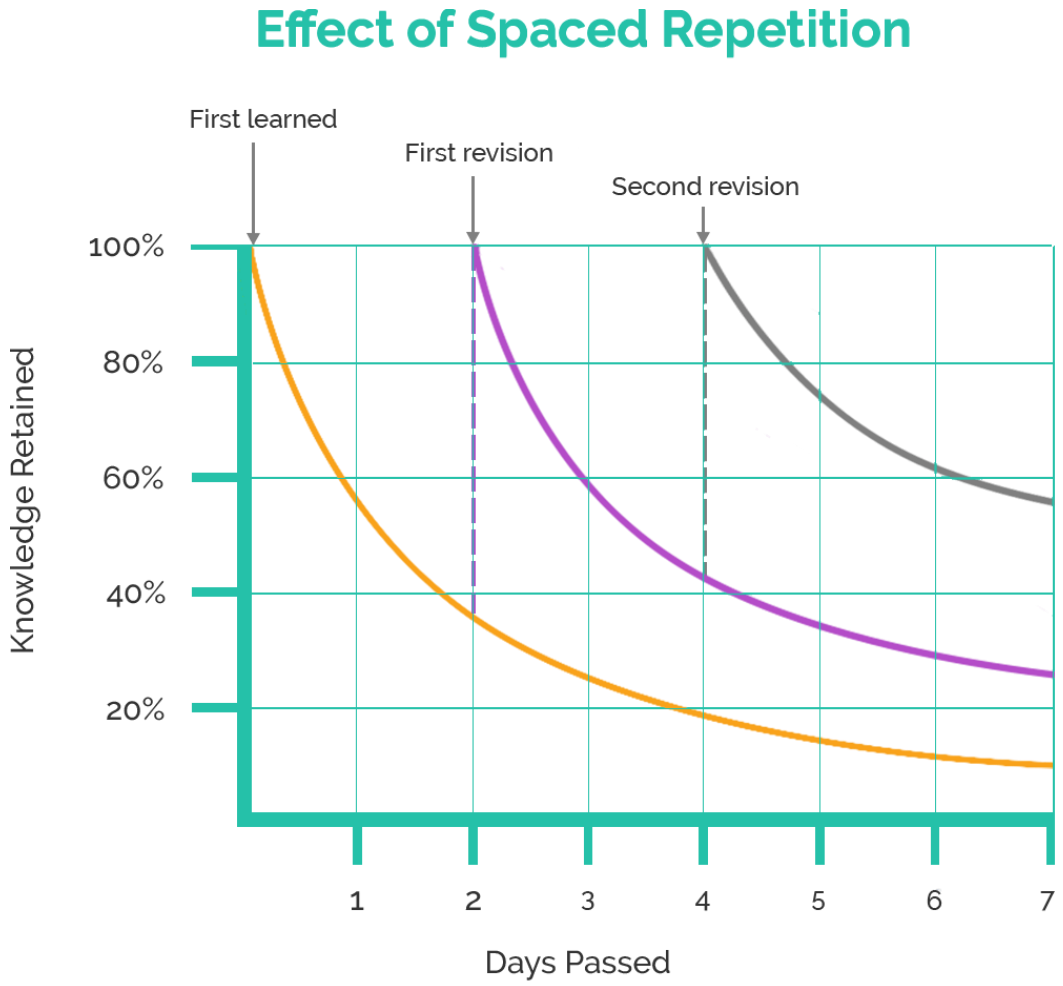
REVISION

You remember what you practise, not just what you look at.

- **Don’t just read notes** – practise questions regularly.
- **Use your booklets, Dr Frost, and past papers** to practise and test yourself.
- **Focus on topics you find hard**, not just your favourites.
- Use your exercise book to write out full solutions and working.
- Mark your answers and learn from your mistakes.
- Little and often is more effective than cramming.

WHAT IS THE POINT?

- **We forget quickly.** New information fades fast unless you do something about it.
- **Recalling it slows that down.** Every effort to bring something back to mind tells your brain the memory matters.
- **Repetition deepens it.** The more often you retrieve something, the more firmly it sticks.
- **Practical tip:** Try to recall material in repeated tasks such as your homework, Do Nows, entrance tickets and quizzes.
- **Why it matters:** Using your memory this way helps you retain knowledge in the long term.



PAST PAPERS

- Work through past papers throughout the course, and **intensively in Year 13**.
- You will find them on **hgsmaths.com** and on **Dr Frost**.
- Do them under **timed conditions** wherever you can – working slowly on a paper teaches you very little about sitting one.
- Focus on the topics you get wrong, not the ones you enjoy.
- If you are not sure why an answer was wrong, bring the paper to the Maths Clinic.

MARKING YOUR OWN PAPER

1. **Show full working.** The marks are usually in the method, not the answer.
2. **Mark it yourself** against the official mark scheme or the worked video.
3. **Fix the gap.** Review every mistake instead of moving straight on to the next paper.

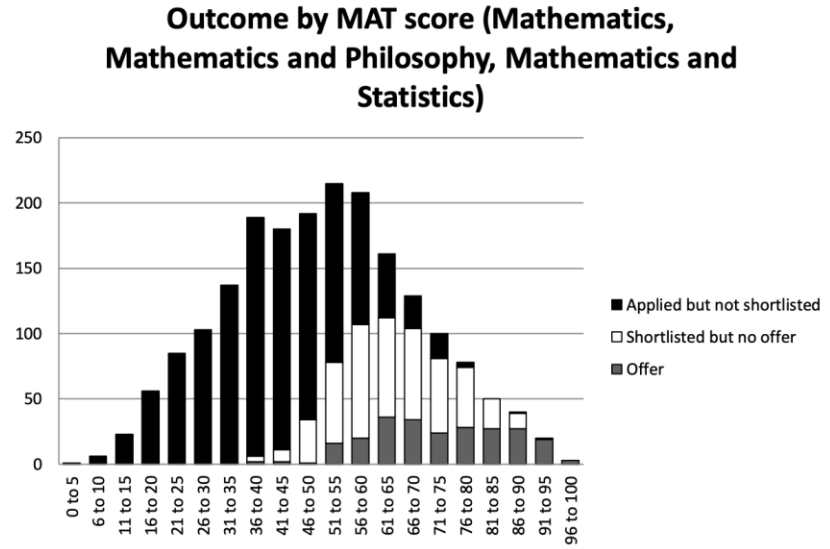
A paper you have not marked has taught you nothing.

SENIOR MATHEMATICAL CHALLENGE

- A national competition run by the UK Mathematics Trust, a charity that promotes advanced problem-solving in schools.
- Do well and it counts: university scholarships, mentoring and UCAS-recognised certificates.
- Depth, not breadth: the questions test how deep your knowledge is. Famously, no calculus – treat it as a mock for your entrance exams.
- Everything to gain, nothing to lose. To prepare, work through past papers – links are on hgsmaths.com – and come to the weekly support sessions. Do well and you could reach the follow-on round on **Wednesday 18 November 2026**.

A post will be on Microsoft Teams on Monday with details on how to sign up for the SMC — sign-up deadline is **Monday 14th September 2026**, and the Challenge takes place on **Wednesday 7th October 2026**.

UK Maths Trust



ADMISSIONS TESTS

- **TMUA** – the Test of Mathematics for University Admission. Required or recommended by Cambridge, Oxford, LSE, UCL, Warwick and Durham, among others.
- **Oxford's MAT no longer exists.** From 2026 entry Oxford uses the TMUA instead, so ignore older advice telling you to prepare for the MAT.
- **STEP** – sat in June, and usually part of a Cambridge or Warwick offer. Registration normally opens in March and closes in early May.
- Requirements vary by course, not just by university. Check the course page before you assume.
- Start early. These reward months of problem-solving, not a fortnight of cramming – and the Maths Challenge is the same skill.

TMUA SITTINGS FOR 2027 ENTRY

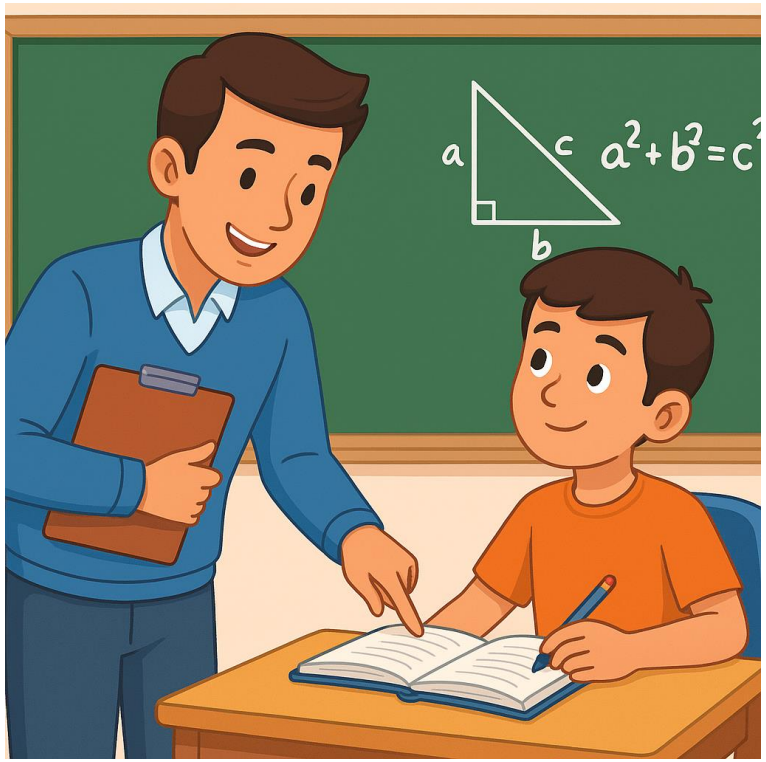
Sitting 1: 12–16 October 2026

Sitting 2: 4–8 January 2027

Booking for October is already open. STEP dates for 2027 are not published yet – we will confirm them when they are.

SUPPORT

- Your mathematics teacher is your first point of contact for any question about your learning.
- **You can speak to them in person before school, at break, at lunch, or after school.**
- **You can also message them on Teams or send a polite email using your school account.**
- You can ask about **homework, something you didn't understand in class, or extra help before a test**.
- Don't expect an instant reply to an email or Teams message. **It is always best to ask in person, and to ask well before your homework is due or a test arrives.**



MATHS CLINIC

There are two **break-time clubs** running for mathematics.

THURSDAY
Room 27
Maths Challenge and Admissions Test

- Prepare for the senior UKMT challenges by practising questions from past papers.
- TMUA and STEP questions and activities.

On some enrichment days there will be dedicated sessions explaining what the admissions tests are, and how we can support you through them.

We will also visit university mathematics departments in the summer term.

THURSDAY
Room 20
Mentoring and Intervention

- If you need extra help, support and guidance Mr Dhillow (head of department) alongside sixth form mentors are available.

Details will be confirmed on Microsoft Teams.

SUCCESS

- You are obviously capable of achieving a top grade, as you met the entry requirements to study Mathematics at a grammar school.
- Some of you may not have needed to work too hard to achieve your 7s, 8s, or 9s because you are very talented mathematicians. Not itself a bad thing!
- However, all of you will need to **work consistently** throughout your A levels, no matter who you are, because they are significantly **more challenging**.
- Practice is key, and you need plenty of it! **YOU MUST COMPLETE ALL TEXTBOOK EXERCISES!**
- Whatever you do, **DO NOT FALL BEHIND**. Don't think you can cram it all in at the last minute. Many like you have tried at **GCSE and SUCCEEDED**…but then tried at **A level and FAILED**!

THE 6 P'S FOR SUCCESS ARE:

- **PRACTICE**
- **PERSEVERANCE**
- **PRECISION**
- **AND PRACTICE, PRACTICE, PRACTICE**

SURVEY

If you could have told yourself ONE thing at the beginning of Year 12, to make a better start to A level Maths, what would it have been?

Responses from Year 13 students:

- **Do every single textbook exercise as homework, as soon as it is set.**
- **Try past paper questions as soon as you can.**
- **If you don't understand something, ask – and watch videos explaining the topics you struggle with.**
- **Pre-read the content before the lesson.**
- **Revise more often, and more consistently.**
- **DO NOT underestimate the jump from GCSE to A level – it takes many more hours of work.**
- **Start on entrance exams earlier – STEP, ENGAA and so on.**

2026 RESULTS

Our results in summer 2026 – and what you are working towards.

GCSE MATHEMATICS

53%	Grade 9–8
80%	Grade 9–7
99%	Grade 9–5
100%	Grade 9–4

LEVEL 2 FURTHER MATHEMATICS

64%	Grade 9–8
96%	Grade 9–7
100%	Grade 9–6

A LEVEL MATHEMATICS

40%	Grade A*–A
60%	Grade A*–B
81%	Grade A*–C
98%	Grade A*–E

A LEVEL FURTHER MATHEMATICS

58%	Grade A*–A
100%	Grade A*–B

EXAM DATES

Your papers in summer 2027, from the exam boards' final timetables. Check them against the timetable you are given in school.

A LEVEL MATHEMATICS (EDEXCEL 9MA0)

Paper	Content	Date		Length
Paper 1	Pure Mathematics 1	Wednesday 26 May	pm	2h
Paper 2	Pure Mathematics 2	Wednesday 9 June	pm	2h
Paper 3	Statistics & Mechanics	Wednesday 16 June	pm	2h

A LEVEL FURTHER MATHEMATICS (EDEXCEL 9FM0)

Paper	Content	Date		Length
Paper 1	Core Pure Mathematics 1	Wednesday 12 May	pm	1h 30m
Paper 2	Core Pure Mathematics 2	Thursday 20 May	pm	1h 30m
Paper 3A	Further Pure Mathematics 1	Friday 18 June	pm	1h 30m
Paper 4A	Further Pure Mathematics 2	Monday 21 June	pm	1h 30m

GRADE BOUNDARIES – MATHS

Marks needed for each grade in A Level Mathematics, out of 300. These are the June series; the full table is on hgsmaths.com.

Year	A*	A	B	C	D	E
2018	229	184	155	126	98	70
2019	217	165	134	103	73	43
2022	217	164	130	96	62	28
2023	244	196	158	121	84	47
2024	251	205	167	130	93	56
2025	258	214	178	142	106	71
2026	254	210	173	136	100	64
Average	**239**	**191**	**156**	**122**	**88**	**54**

GRADE BOUNDARIES – FURTHER MATHS

Marks needed for each grade in A Level Further Mathematics (Pearson 9FM0), out of 300. These are the June series; the full table is on hgsmaths.com.

Year	A*	A	B	C	D	E
2019	235	197	163	129	96	63
2022	250	209	169	129	89	49
2023	235	199	165	132	99	66
2024	269	240	199	159	119	79
2025	262	233	195	158	121	84
2026	263	237	200	163	127	91
Average	**252**	**219**	**182**	**145**	**108**	**72**

WHAT IS NEXT?

That's it – you're ready to start your maths journey.

- You have the resources.
- You know the routines.
- You know how to get support.

Now it's all about effort, curiosity, and making the most of every lesson.

Quick Reminders

- Bring your equipment, and your booklet, every day.
- Complete every homework on time, showing full working.
- Ask questions, and take pride in what you write.

Aim for progress, not perfection.
We're here to help you succeed – and to enjoy the process along the way.

NEED HELP, OR STUCK ON SOMETHING?

Email your teacher, or send them a message on Teams. It is always best to ask in person if you can – before school, at break, at lunch or after school.

EVERYTHING IS ON THE WEBSITE

hgsmaths.com

- Curriculum map and reading list
- Student and task booklets
- Past papers and revision resources