



**KING EDWARD VI
HANDSWORTH GRAMMAR
SCHOOL FOR BOYS**



**KING EDWARD VI
ACADEMY TRUST
BIRMINGHAM**

HGS  **MATHS**

**START OF YEAR INFORMATION
YEARS 7 AND 8**

STUDENT BOOKLETS

- All notes and examples will be completed in printed booklets.
- You must keep your booklets neat and up to date.
- **Booklets will be kept in school until fully completed**, after which you will be allowed to take them home.



2026 Year 7 Mathematics 2027
Unit 1 Student

HGS Maths


Tasks


Dr Frost Course


Name: _____

Class: _____



2026 Year 9 Mathematics 2027
Unit 11 Student

HGS Maths


Tasks

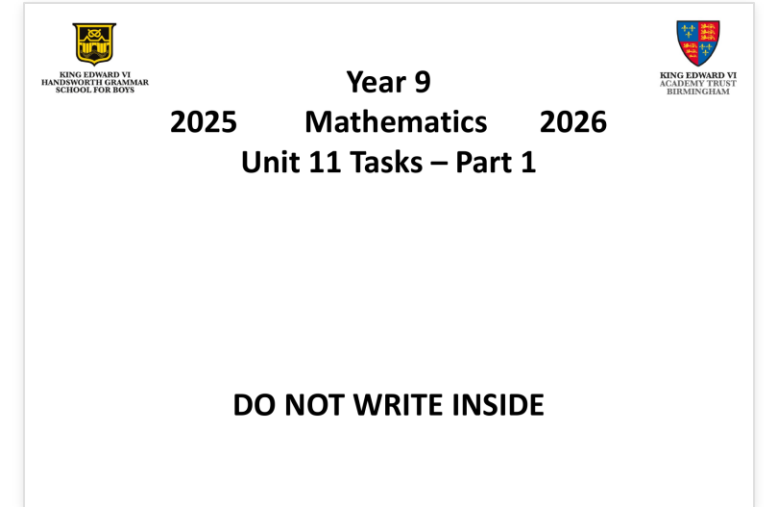
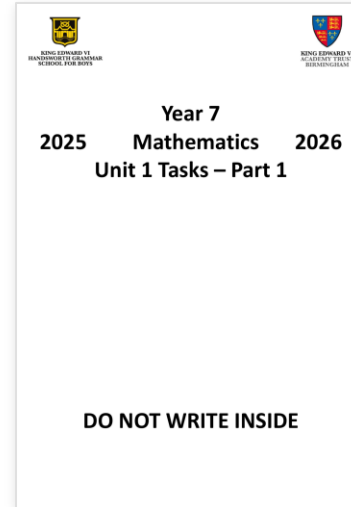

Dr Frost Course


Name: _____

Class: _____

TASK BOOKLETS

- Questions will be projected on the board or provided in a task booklet.
- **Do not write in the task booklets**, as they will be reused next year.



KNOWLEDGE ORGANISERS

- Every unit has a **knowledge organiser**.
- It holds the key facts, definitions, methods and worked examples.
- **Reading it is not revision.** You only find out what you actually know when you put it away and try without it.
- Keep it with your booklet and look there first when stuck.

HOW TO USE ONE

- 1 **Cover** a section – a definition, a method, or a worked example.
- 2 **Do it yourself:** write the fact out, or work through the example.
- 3 **Check** against the organiser, and redo whatever you got wrong.

If you can only recognise it, you do not know it yet.

1 Factors, Multiples & Primes

YEAR 7 · UNIT 1 KNOWLEDGE ORGANISER

HGS MATHS — YEAR 7
HANDSWORTH GRAMMAR SCHOOL
PART 1 OF 3

KEY VOCABULARY

- Multiple** — the number $\times$ a whole number (its times table). **Infinite.** M(6): 6, 12, 18, 24...
- Factor** — divides **exactly** (no remainder). Factors come in **pairs**. F(24): 1, 2, 3, 4, 6, 8, 12, 24
- Prime** — **exactly two** factors (1 and itself). 2 is the only even prime; 1 is **not** prime.
- Composite** — **more than two** factors (e.g. 12, 15, 16).
- LCM** — Lowest Common Multiple: smallest number in **both** times tables.
- HCF** — Highest Common Factor: largest factor **both** numbers share.

SPECIAL NUMBERS — LEARN THESE

SQUARE $\times 15$
1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225

CUBE $\times 10$ 1, 8, 27, 64, 125, 216, 343, 512, 729, 1000

TRIANGULAR $\times 10$ 1, 3, 6, 10, 15, 21, 28, 36, 45, 55
Triangular numbers add 1, 2, 3, 4... each time (1, 1+2, 1+2+3...).

LISTING FACTORS IN PAIRS — 24

1 $\times$ 24 2 $\times$ 12 3 $\times$ 8 4 $\times$ 6

Each arc is a factor pair — work inwards from 1 $\times$ 24 so you miss none.

DIVISIBILITY TESTS

+	THE NUMBER IS DIVISIBLE IF...
2	it ends in 0, 2, 4, 6 or 8
3	digit sum is divisible by 3
4	last two digits divisible by 4
5	it ends in 0 or 5
6	divisible by both 2 and 3
8	last three digits divisible by 8
9	digit sum is divisible by 9
10	it ends in 0
11	(odd-position sum – even-position sum) $\div$ 11
12	divisible by both 3 and 4

FINDING THE HCF — LIST THE FACTORS

HCF of 8 and 12

F(8) 1 2 4 8
F(12) 1 2 3 4 6 12

Common: 1, 2, 4 $\rightarrow$ take the **highest**

HCF = 4

FINDING THE LCM — LIST THE MULTIPLES

LCM of 8 and 12

M(8) 8 16 24 32 40
M(12) 12 24 36 48

First common multiple $\rightarrow$ take the **lowest**

LCM = 24

PRIMES TO 100 — LEARN ALL 25

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, 97

Test a number by trying to divide it — e.g. $51 \div 3 = 17$, so 51 is **not** prime.

THE BIG IDEA

- A common factor / multiple appears in **both** lists.
- HCF** = the **highest** common factor · **LCM** = the **lowest** common multiple.
- There is **no** highest common multiple — there are infinitely many.

CHOOSING HCF OR LCM

- HCF** $\rightarrow$ sharing / cutting into the **largest equal groups**.
- LCM** $\rightarrow$ events that **repeat together** (bells, lights, packets).

COMMON EXAM MISTAKES (recurring errors flagged in examiners' reports)

✗ Calling 1 a **prime**, or thinking 2 is not prime.

✗ Treating 9, 15, 21, 51, 57 or 91 as prime — always test for factors.

✗ Mixing up **factor** and **multiple** — a factor divides into it; a multiple is *in* its times table.

✗ Confusing **HCF** and **LCM**, or picking the wrong one in a worded problem.

✗ Doing **$a \times b$ for the LCM** — only works when they share no factors.

✗ Forgetting **1 is always a common factor** of every pair.

Revise it: cover a panel, write what you remember, then check — repeat until the whole page recalls.

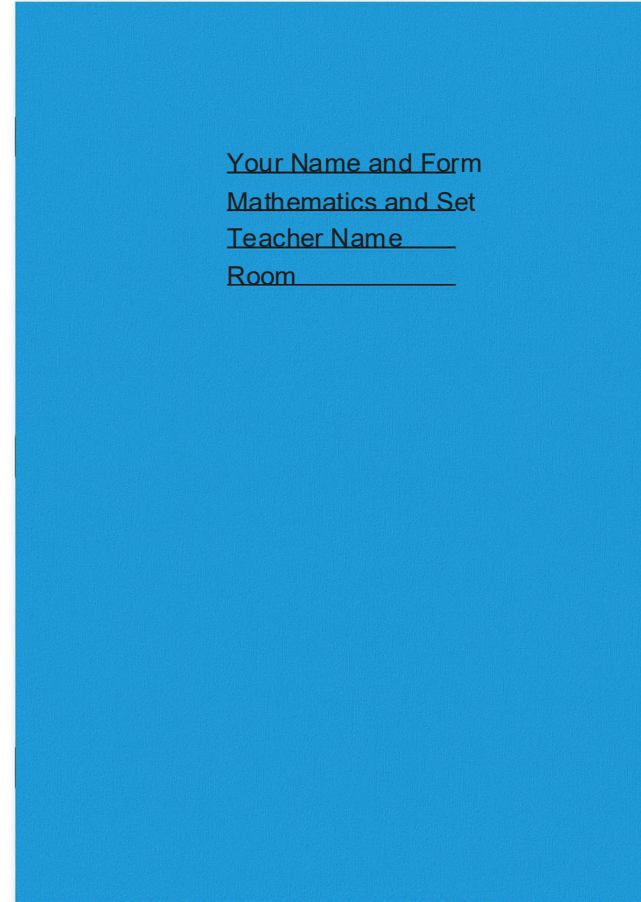
HGS Maths · Year 7 Unit 1 · Part 1/3 · hgsmaths.com

CURRICULUM MAP

- Everything you will study, unit by unit, from Year 7 to Year 11.

Curriculum Map - Maths and Further Maths					
Year 7	Unit 1 Factors, Multiples and Primes Sets and Venn Diagrams Negative Numbers	Unit 2 Powers and Roots Order of Operations Introduction to Algebra	Unit 3 Fractions Decimals Solving Linear Equations 1	Unit 4 Rounding Metric Units Properties of 2D Shapes Area and Perimeter	Unit 5 Fractions, Decimals and Percentages Ordering Numbers Percentages Angle Basics
Year 8	Unit 6 Ratio Algebra Recap Index Laws	Unit 7 Prime Factorisation Introduction to Probability Expanding Single Brackets	Unit 8 Factorising into Single Brackets Solving Linear Equations 2 Sequences	Unit 9 Proportion Averages and Range Coordinates Charts	Unit 10 Estimation Circles Angles in Parallel Lines
Year 9	Unit 11 Fraction Arithmetic Highest Common Factor and Lowest Common Multiple Standard Form Types of Numbers Multiplying and Simplifying Surds Angles in Polygons	Unit 12 Expanding Double Brackets Factorising by Grouping Factorising Quadratics Difference of Two Squares Basic Functions Changing the Subject Inverse Functions	Unit 13 2D Pythagoras' Theorem Properties of 3D Shapes Plans and Elevations Volume and Surface Area of Prisms Area and Volume Unit Conversions Compound Measures	Unit 14 Linear Inequalities Straight Line Graphs Basic Vectors Transformations Invariant Points	Unit 15 Percentages with Multipliers Simple and Compound Interest Similarity with Length Right-Angled Trigonometry
Year 10	Unit 16 Recurring Decimals Parallel and Perpendicular Lines Graphical Inequalities Graphical Simultaneous Equations Linear Simultaneous Equations Non-Linear Graphs	Unit 17 Bounds and Error Intervals Basic Circle Theorems Direct and Inverse Proportion Constructions and Loci	Unit 18 Advanced Data Handling Expanding Triple Brackets Solving Quadratics Advanced Ratio	Unit 19 Advanced Indices Calculating with Surds Algebraic Fractions	Unit 20 Advanced Simultaneous Equations Advanced Trigonometry 3D Pythagoras' Theorem and Trigonometry Exponential and Trigonometric Graphs
Year 11	Unit 21 Advanced Statistics Advanced Probability Combinations and Permutations Capture-Recapture	Unit 22 Completing the Square Advanced Functions Quadratic Graphs Quadratic Inequalities Real-Life Graphs Gradients and Areas of Graphs	Unit 23 Similarity with Area and Volume Arcs, Sectors and Segments Volume and Surface Area of Non-Prisms Bearings	Unit 24 Equations of Circles and Tangents Advanced Sequences Iterations Algebraic Proof Advanced Vectors	Unit 25 Graph Transformations Congruence and Similarity Proofs Circle Theorem Proofs
Level 2 Further Maths	Unit 26 Advanced Straight Line Graphs Three Linear Simultaneous Equations	Unit 27 Binomial Expansion Factor Theorem	Unit 28 Matrices Trigonometric Identities and Equations	Unit 29 Differentiation Domain and Range Piecewise Functions	Unit 30 Advanced Equations of Circles Limiting Values of Sequences

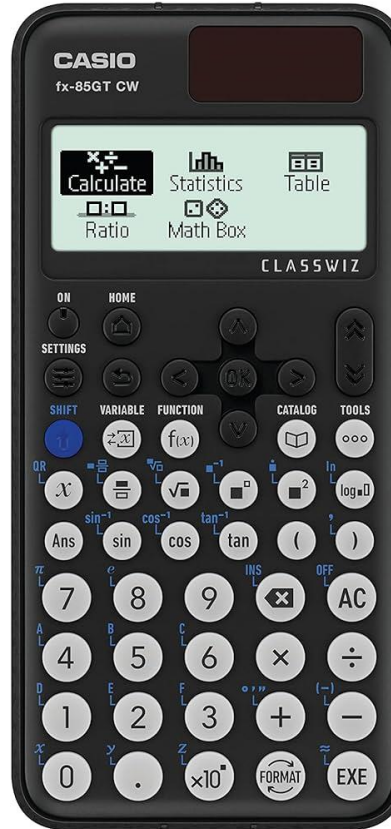
- This is your book for all classwork, and you should keep it neat.
- All **classwork** is done at the **front** of the book.
- All marking is done through self-assessment or peer assessment.
- You should always include:
 - **Dates**
 - **Headings**
 - **Margins**
- You must take this book home and bring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



Your Name and Form
Mathematics and Set
Teacher Name_____
Room_____

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
 - Protractor
 - Compass
 - Mini whiteboard pen
 - Calculator (Casio fx-85GT CW or fx-991CW)
- A full equipment pack can be purchased from the school – details will be posted on Microsoft Teams.



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.

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.

BENEFITS OF ENOUGH SLEEP



Better Brain

Improved memory
and concentration



Better Body

Improved energy



Better Mood

Improved emotional
resilience



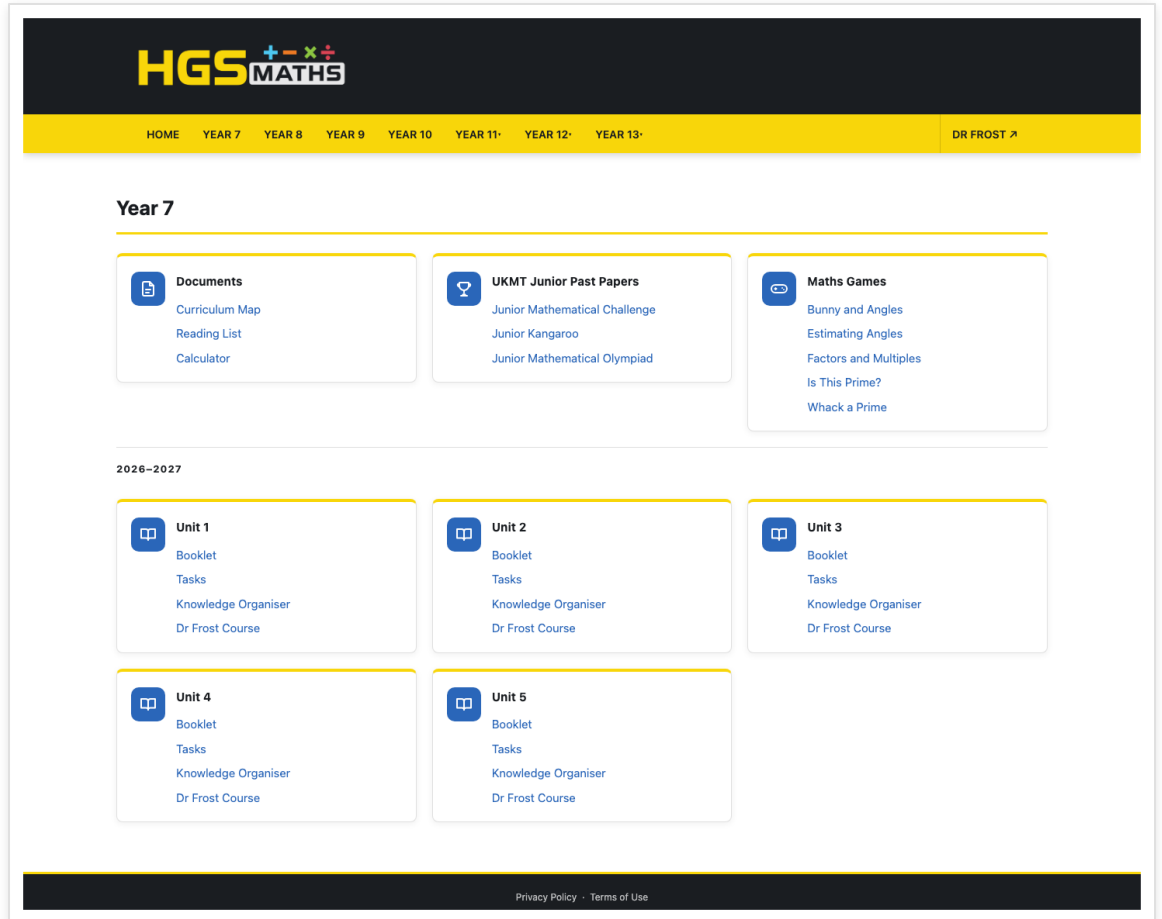
IF YOU MISS A LESSON

- 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

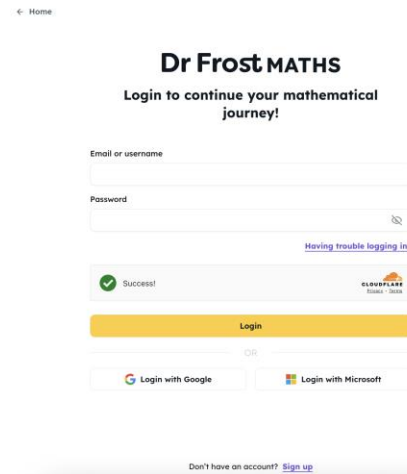
If you were away when a homework was set, it will still be on Arbor. Check it as soon as you are back, and speak to your teacher straight away if you genuinely need more time.

- You will find the **curriculum map**, **reading list**, **booklets**, and **knowledge organisers** on your year page.
- Every unit has a **booklet**, a **task booklet**, a **knowledge organiser** and a link straight to its **Dr Frost course**.
- UKMT **Junior past papers** are on the same page, along with some maths games.



DR FROST – LOGGING IN

- 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.
- You will be shown how to log in during your **ICT induction lesson**.



The screenshot shows the login interface for Dr Frost MATHS. At the top, it says "Dr Frost MATHS" and "Login to continue your mathematical journey!". Below this are two input fields: "Email or username" and "Password". A "Login" button is positioned below the password field. To the right of the password field is a link that says "Having trouble logging in?". Below the login button is a "Success!" message with a green checkmark icon. At the bottom, there are two social login options: "Login with Google" and "Login with Microsoft". A link at the very bottom says "Don't have an account? Sign up".



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.**

Courses
Courses are collections of skills organised into units and modules, designed to guide your learning. Click on a course to explore its content, practice the skills, and start answering questions.

Class Test 5
Courses that have been assigned to Test


SoL

King Edward VI Handsworth Grammar School for Boys
Year 10


SoL

King Edward VI Handsworth Grammar School for Boys
Year 8


SoL

King Edward VI Handsworth Grammar School for Boys
Year 7

[Show all](#)

Dr Frost MATHS

King Edward VI Handsworth Grammar School for Boys → Year 7 → Unit 1 →

Factors, Multiples and Primes

[View in old courses experience](#)

Unit skills

☐ **52 Multiples of a number**
Mastery: 0/100

OR NARROW DOWN	VIDEO	DIFFICULTY	RECENT ACCURACY
☐ 52: Exam Practice: Multiples of a number	Example	1-4	
☐ 52a: Identify multiples of a number from 1 to 12.	Example	1	
☐ 52b: Identify multiples of a number greater than 12.	Example	1	
☐ 52c: Write the first 3 multiples of a number.	Example	1	
52d: Write all the multiples of a			

Courses

King Edward VI Handsworth Grammar School for Boys
Year 7

▼ **Unit 1** 3 units
[Factors, Multiples and Primes](#)
[Sets and Venn Diagrams](#)
[Negative Numbers](#)

▼ **Unit 2** 3 units

▼ **Unit 3** 3 units

▼ **Unit 4** 4 units

▼ **Unit 5** 4 units

▼ **Calculator** 1 units

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 at the end of every unit.**
- There will be a **separate end-of-year exam.**



Year 7
Mathematics
Unit 1 Assessment
40 Minutes
Non-Calculator



Full Name: _____

Class: _____

Section A: / 30

Section B: / 20

Total: / 50

Instructions

- Use **black** ink or ball-point pen.
- Answer **all** questions.
- Answer the questions in the spaces provided
 - there may be more space than you need.
- You must **show all your working**
 - **TRIAL AND ERROR WILL SCORE ZERO MARKS.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.

Information

- The marks for **each** question are shown in brackets
 - use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- Good luck with your examination.



Year 9
Mathematics
End of Year Assessment
90 Minutes
Calculator



Full Name: _____

Class: _____

Total: / 80

Instructions

- Use **black** ink or ball-point pen.
- Answer **all** questions.
- Answer the questions in the spaces provided
 - there may be more space than you need.
- You must **show all your working**
 - **TRIAL AND ERROR WILL SCORE ZERO MARKS.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.

Information

- The marks for **each** question are shown in brackets
 - use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.
- Good luck with your examination.

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

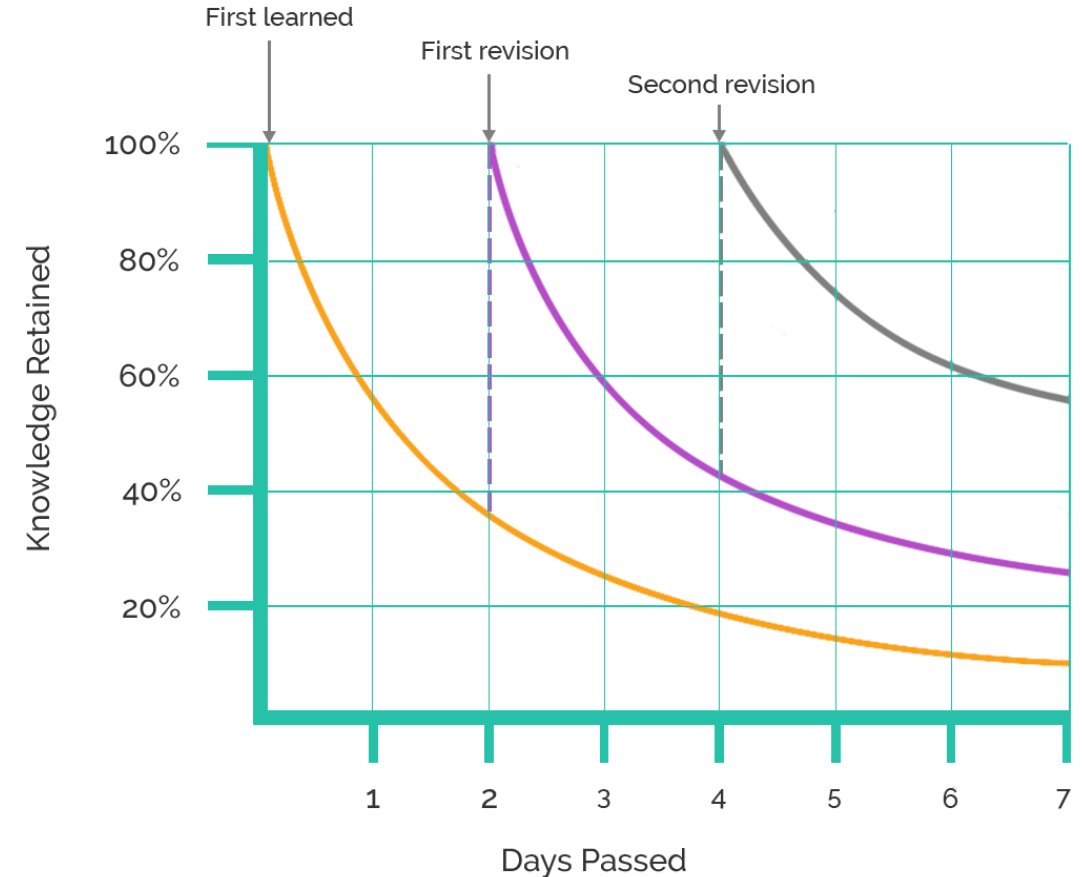
- **Don't just read notes** – practise questions regularly.
- **Use your booklets, Dr Frost, and past papers** to practise and test yourself.
- **Focus on topics you find hard**, not just your favourites.
- Use your exercise book to write out full solutions and working.
- Mark your answers and learn 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.

Effect of Spaced Repetition



JUNIOR MATHEMATICAL CHALLENGE

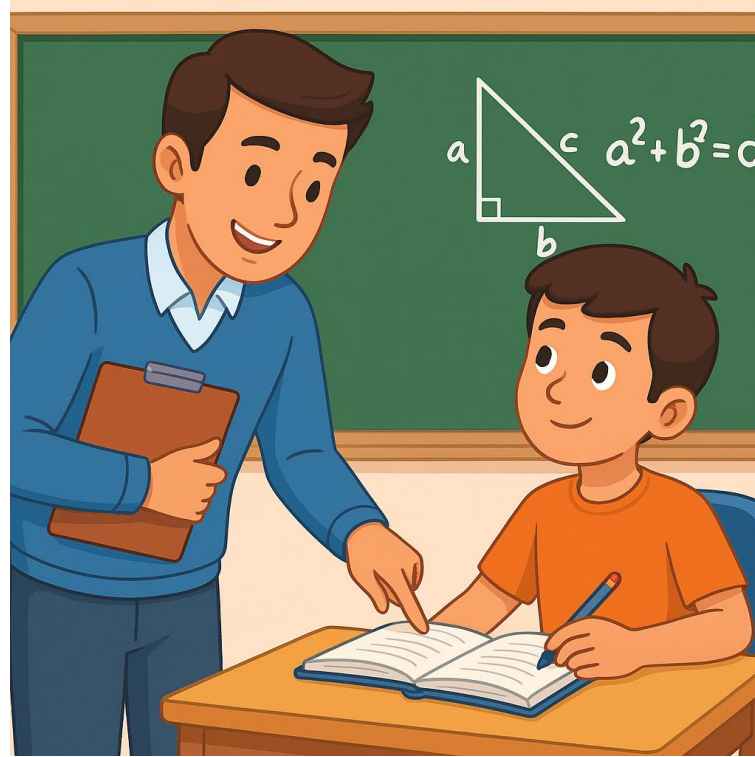
- A national competition run by the UK Mathematics Trust, a charity that promotes advanced problem-solving in schools.
- Test yourself against the best in the country – think of it as football trials, but for maths.
- Depth, not breadth: the questions test how deep your knowledge is, not how much you have covered.
- To prepare, work through past papers – links are on [hgsmaths.com](https://www.hgsmaths.com) – and come to the weekly support sessions.
- Everything to gain, nothing to lose: do well and you could win a certificate, a summer school place, or a spot in the follow-on round on **Tuesday 15 June 2027**.



UK Maths Trust



- 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.**



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

TUESDAY
Room 21
Maths Clinic

- Dr Frost homework.
- Past paper questions.
- A quiet space to focus on maths or get extra practice.

THURSDAY
Room 27
Maths Challenge

- A weekly chance to work through harder questions.
- Work in groups with like-minded students.
- Attend regularly and you may be chosen for trips and competitions.

THURSDAY
Room 20
Maths Mentoring and Intervention

- A teacher and sixth-form mentors to help you with any topic you find difficult.
- Support programmes to help you get back on track.

Details will be confirmed on Microsoft Teams.

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**A LEVEL MATHEMATICS****40%** Grade A*–A**60%** Grade A*–B**81%** Grade A*–C**98%** Grade A*–E**LEVEL 2 FURTHER MATHEMATICS****64%** Grade 9–8**96%** Grade 9–7**100%** Grade 9–6**A LEVEL FURTHER MATHEMATICS****58%** Grade A*–A**100%** Grade A*–B

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