



# Learning to fly in Maths

These are the skills and habits which outstanding students of Maths develop. Do as many of these as possible to become completely independent in the subject and to develop the skills and knowledge needed to attain 8/9 at GCSE and A\* at A Level.

## In your lessons

- Dive in and have a go. Mistakes are good! They lead you to a deeper understanding.
- Correct your homework and classwork and address any errors. As well as writing the correct answer write enough method so you will understand it when you come to revise.
- Ask for help if you do not understand *any* part of a topic. Your questions may help the rest of the class.
- Recognise connections within mathematics.
- Work independently.
- Persevere and don't be afraid to work at your own pace.
- Work with other students. Discussion and explanation to each other also helps you to learn.

## Between your lessons

- Do your homework! If you are stuck on a significant part of it get help *before* the lesson.
- Always show your method/working. You need to be able to explain your mathematical thinking.
- Make notes of any questions to ask your teachers in class.
- Go to a Thursday lunchtime help session if you do not understand your work.
- When revising for tests keep it active, do problems rather than write notes and lists! Explore different methods. Work on the topics you *don't* understand.

## Beyond your lessons

- Always challenge yourself! If you understand the basic homework questions spend your time doing the starred extension problems. Go on the **NRICH** website [www.nrich.maths.org](http://www.nrich.maths.org) or **Underground Maths** <https://undergroundmathematics.org> In KS5 use the **Integral website** <https://integralmaths.org> to practise.
- Read a general maths book. See how maths is used in other subjects.
  - Why do Buses come in Threes** Eastaway and Wyndham
  - How Long is a Piece of String** Eastaway
  - Does God Play Dice** Ian Stewart (or many other books by the same author)
  - You are a Mathematician** David Wells (or many other books by the same author)
  - Fermat's Last Theorem** Simon Singh (or many other books by the same author)
  - Chaos** James Gleick
  - Music of the Primes** Marcus du Sautoy (or many other books by the same author)
  - 50 Maths Ideas that you really need to know** Tony Crilly
  - The Tiger that isn't** Blastland and Dilnot
  - How to lie with Statistics** Darrell Huff
  - Bad Science** Ben Goldacre
  - 1089 and all that** David Acheson
  - The man who loved numbers** Ben Hoffman
  - The Joy of Counting** Tom Korner
- Do a logic problem.

- Watch a **Numberphile** video <https://www.youtube.com/channel/UCoxcjg-8xIDTYp3uz647V5A> .
- Try a practice paper before your annual maths challenge. Go to the mentoring sessions beforehand at lunchtimes.
- After tests go through and revisit the questions on which you lost marks.
- Volunteer to be a mentor for a younger student.
- In KS5 apply to be a maths student subject leader.
- Don't spend all your time doing maths! We've heard a rumour that other things are almost as good!

Everyone has a log in for **Hegarty Maths**. You should always use this resource to support your learning and revision.