

Maths and Further Maths A Level

Preparation work: Pre-course Reading, Research and Tasks

Pre-reading and research will help you to become more familiar with the topics you are going to study on your A-Level Maths and Further Maths course. If you complete the tasks below, they will also help you to become more confident when you start your course. Remember it is also a good idea to make sure you recap and consolidate your GCSE Maths knowledge as well.

Specification :

We follow the Pearson Edexcel specifications for A-level Maths and Further Maths. Have a browse through their specifications. You can select Maths or Further Maths from the following link:

<https://qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html>

What else can I be doing to prepare myself for A-level :

We follow the Pearson Edexcel specifications for A-level Maths and Further Maths. Have a browse through their specifications. You can select Maths or Further Maths from the following link:

- **CGP's book "Head Start to A-Level Maths" is free on Kindle (accessed via a free app)**
<https://www.amazon.co.uk/Head-Start-Level-Maths-2017-2018/dp/1782947922>
- **Hegarty Maths Headstart to A-level Videos.**
<https://www.youtube.com/user/HEGARTYMATHS/videos>
- **AMSP online course:** <https://amsp.org.uk/about/school-college-closures>
- **Exam Solutions:** Watch the videos in the 'prior knowledge' section
<https://www.examsolutions.net/a-level-maths/edexcel/pure-maths-a-level-tutorials>

Task 1:

- <http://www.s253053503.websitehome.co.uk/risps/risp-10.pdf>
- <http://www.s253053503.websitehome.co.uk/risps/risp-12.pdf>
- These are taken from www.risps.co.uk where you can find helpsheets for these problems and lots of interesting questions.

Task 2:

- **Probability.** Can you number three (six sided) dice A, B and C so that A scores higher than B with probability greater than 0.5, B scores higher than C with probability greater than 0.5 and C scores higher than A with probability greater than 0.5? See https://en.wikipedia.org/wiki/Nontransitive_dice for a discussion.
- **Mechanics.** Dangerous Driver Analysis <https://nrich.maths.org/6417>

Websites for Further Research and Reading:

More A-level standard problems to solve: <https://nrich.maths.org/9088>

Some great resources for A-level Maths: <https://integralmaths.org>

Books to Read:

- **Fermat's Last Theorem** by Simon Singh
- **Infinite Powers** by Steven Strogatz
- **How not to be wrong** by Jordan Ellenberg
- **Why do buses come in threes?** by Rob Eastaway
- **Alex's Adventures in Numberland** by Alex Bellos

Podcasts:

Numberphile. <https://www.youtube.com/channel/UCoxcjg-8xIDTYp3uz647V5A>

Infinite Monkey Cage. <https://www.bbc.co.uk/programmes/b00snr0w>

Task 3:

Speedy Summations: Watch this video on a speedy summation and then answer the questions below it. This is a second year topic. <https://nrich.maths.org/6610>

Films to Watch:

- **The Man Who Knew Infinity**
- **The Theory of Everything**
- **A Beautiful Mind**
- **The Imitation Game**

Progression Opportunities

Why choose Maths and Further Maths A Level:

<https://amsp.org.uk/resource/why-study-maths>

We hope you enjoy completing these tasks and look forward to you joining the course.

