



DIXONS
SIXTH FORM
ACADEMY

SUMMER WORK: A LEVEL MATHEMATICS

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About the Summer Work

This booklet contains a number of tasks that students are expected to complete to a good standard in order to be enrolled in this subject.

Please complete these tasks on A4 paper and bring them with you to your first maths lesson.

The work handed in should be:

- written in black or blue ink on A4 lined paper with pencil for graph drawing
- exercises labelled and question numbers included
- work should be self-marked and corrected for errors
- have student's full name on each sheet
- multiple sheets should be stapled together

This booklet also contains significant additional information. We would encourage you to complete all the tasks including the optional ones to fully prepare for Sixth Form study.

Calculators may be used to support your answer but working must be shown. Video links are included with each exercise if you require further examples that are worked through, but all work is predominantly revision from GCSE.

Welcome to Mathematics

Subject outline

A-level maths is the most popular A-level taken by students who go on to university. The subject sharpens many key skills, including the ability to get to grips with problems, something that lies at the centre of many fields. Students who study maths at A-Level relish a challenge and enjoy investigating different processes. Successful students understand the power of practise in mathematics and invest their study time in completing exercises and past exam questions frequently so as to become familiar with a range of different contexts. Outside of lesson time, students need to use their independent study time to practice maths and check through solutions from a range of resources including online retrieval practise exercises, textbook procedural practise and past exam papers.

Mathematics has always been a highly valued A-Level by Universities and employers due to its complex content and the demands of the course. Mathematics opens pathways for students to a wide range of courses that require students to be highly numerate and strong logical thinkers. In our technology focussed society, mathematics students can often show innovation and creativity in approaching a challenge and working to find a solution, traits which are essential in the modern-day work force.

Students will study the Edexcel Specification for A Level Mathematics, with three 2-hour papers at the end of year 2.

Paper 1&2 – Pure Mathematics (concepts such as algebra, coordinate geometry, graphs and calculus)

Paper 3 – Mechanics and Statistics (including forces, kinematics and projectiles for mechanics and probability distributions, data handling, hypothesis testing in statistics)

Careers & Higher Education

A Level Mathematics is a facilitating subject, meaning that is a highly respected A Level qualification that is listed as essential on some university courses. If you are interested in studying engineering, economics, mathematics, physics, statistics, actuarial science or computer science most universities require you to complete A Level Mathematics. If you are interested in other routes such as biochemistry, dentistry, business studies, geography or accounting some universities may list mathematics as a useful subject but not essential.

Maths careers are some of the most highly paid careers available. Research shows that on average A Level maths students earn 11% more than other students during their lifetime. Many believe that taking maths at university has limited fields since it doesn't move straight into a vocation. However, this is certainly not the case. Students who continue maths at

university can move into various careers, from graduate roles within the finance industry to working in a graduate role within the civil service. Engineering has many different degree routes and courses and is one of the most popular areas that students choose to work in after university.

An example of a highly mathematical career is an actuary. An actuary works in a business analysing risk, often within the financial sector. Actuaries use mathematical modelling techniques and statistical concepts to determine probability and assess risks, for example, analysing pension scheme liabilities to price commercial insurance. Due to the challenging nature of the exams required to become a qualified actuary, the salary is usually very competitive.

Links to key information:

dixons6a.com/uploads/files/Maths.pdf

qualifications.pearson.com/en/qualifications/edexcel-a-levels/mathematics-2017.html

Summer work tasks

Task 1 – practise exercises

There are 8 practise tasks to complete, with examples and answers, that are all revision of key topics from GCSE. These topics are essential to the study of A Level Mathematics and students need to ensure they fully understand each concept. **Students will be assessed in the first lesson on these topics** to ensure they are starting the course with a grounded understanding of algebra from GCSE. Questions should be completed on paper and should be clearly self-marked. All solutions are provided. The exercises are provided at the end of this pack.

Task 2 – enrolment test

You are going to be set an online assessment that you access by creating an account with Dr Frost Maths. To complete please complete the questions in the booklet ready to input them online once you arrive in September. Your score from this will be recorded and sent to your new maths teacher so they will be able to assess your current understanding. **This should be done after the practise exercises are completed.**

Reading list

Suggested reading:

[The Codebook](#) by *Simon Singh*

[Infinity: The Quest to Think the Unthinkable](#) by *Brian Clegg*

[The Man who knew Infinity](#) by *Robert Kanigel*

Suggested viewing:

bbc.co.uk/iplayer/episode/b0074rxx/horizon-19951996-fermats-last-theorem