Sixth Form Handbook
Mathematics

Contents

Poole High School

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About the course

The course will be delivered through 11 fortnightly lessons by two Maths teachers. This is a linear course, meaning all exams will be sat at the end of your second year.

Mathematics studies beautiful patterns and creates ways to solve difficult problems. It is a highly valued subject by employers and Universities alike. Over the next 2 years you will explore deeper links between algebra and geometry. In the applied units; we will explore how Mathematics is extremely useful for modelling real world situations in Mechanics, and how we can apply Maths to analyse data in Statistics.

First year assessment

You will have regular topic assessments online as each topic is completed. You will also have formal exams in school to track your progress throughout the year.

Homework will be set differently to main school. You will be expected to read around each topic outside of lessons, as well as keep up with lots of tasks that you will be set. It is up to you to be independent and keep up with your learning.

Second year assessment

You will sit three exam papers. Paper 1 and paper 2 will be on 'pure' Mathematics and paper 3 will examine mechanics and statistics. There is no coursework in A-level Mathematics.

In September you will be issued with sheets to set up folders. The cover sheets are where you need to keep a record of any work you have done, and comment on how it has gone. Also, you should be recording group study sessions you have arranged with friends.

Course Reading List & Materials

Calculators: The new A-level requires a more powerful calculator than your trusty Casio fx-83G PLUS (still a great and classic calculator. Keep it!) We will be using the brand new Casio fx-991EX, dubbed the 'classwiz'. These are available to buy on wisepay.

You will also need folders and dividers for your class notes and examples, and lots of paper for practice exercises.

Books:

Some titles we can recommend (many Maths books can be quite 'heavy' reading). Feel free to talk to your teacher about different types of Maths books!

On studying Maths and hot to solve problems:

How to Solve It, by George Polya

How to study for a Maths degree, by Lara Alcock

Solving Mathematical Problems, Terence Tao (a Fields medalist – written from his perspective)

For general Maths and puzzles:

To infinity and beyond, by Eli Maor

Does God Play Dice?, by I stewart – (who also has written Game, Set, and Math)

Numeracy (and a second book – 'Beyond Numeracy') – by J. A. Paulos

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https://www.youtube.com/channel/UCYO_jab_esuFRV4b17AJtAw

3Blue1brown is an incredible YouTube channel than explains amazing Mathematical concepts visually. This is very advanced, where many concepts are met in year 13.

https://www.youtube.com/user/numberphile

Numberphile is a fantastic YouTube channel that has now hundreds of videos about Mathematics! Some are more complicated than others, but many have engaging animations to help you understand the puzzles.

Many are filmed at the Mathematical Sciences Research Institute – and feature professional Mathematicians talking about their current research!

Mr Miller-Pipe's favourite three presenters are:

- Simon Pampena
- Zvezdelina Stankova - Professor of Mathematics at Mills College
- Tadashi Tokieda – who has many puzzles and tricks you can try to create with simple objects such as paperclips, rubber bands and strips of paper. Give them a go and consider what is happening – try to create rules and your own patterns!

Use your Sparx login to help with key Maths skills. Then look out for posts on the google classroom for further resources if needed.

There is also a great APP from MEI – search for #SUMAZE. This app requires you to solve a series of puzzles, starting with simple skills – working up to the almost impossible, almost! ☺

Expectations

The only way to learn mathematics is to do mathematics. *Paul Halmos*
*(1916-2006; Hungarian-born mathematician)*

As an A-Level Maths student, you will be expected to be much more independent than you may have been previously. As part of this, you will be expected to do the following:

1. Arrive to every lesson fully equipped, including: folders, calculator, textbooks, squared paper and everything else you would have brought in as a year 11.
2. You will be expected to organise and maintain your folders so that all your work is easily accessible. This will make it much easier when you need to look back at old work or revise for an exam. Your folder should include all class work, homework and assessments. This should all be organised neatly using dividers to separate each topic.
3. During lessons, you will be expected to follow exactly the same rules as year 11. There will be lots of periods of independent practice. This is a vital part of A-Level Maths so you will be expected to do as much as you can in lessons and finish anything not completed as homework.
4. All work needs to be presented neatly and with full, clear workings. An example of how to lay out your work is shown on the Summer Task. This needs to continue in all lessons and homework.
5. Homework will be set regularly; however, you are also expected to be completing your own independent study throughout the year. All homework will be uploaded to your Google Classroom and you will be expected to bring it in to show your teacher on the due date. If this is not completed, you will receive a catch up in which you will have to complete the missing work. If you have any issues with the homework or are struggling, it is your responsibility to email/find your teacher before the due date to get the help that you need so that the homework is still completed on time.

Senior Maths Challenge

We will be entering all A level students who are interested into the individual Senior Maths Challenge. This is an individual competition with lots of tricky, but fun, questions to try and answer – so please make yourself known if you are interested in this!
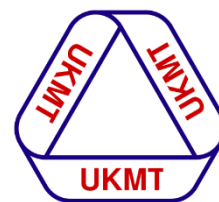
Summer Task

Before you begin year 12, you are expected to complete a Summer Task. This task is designed to help you identify any areas of weakness from GCSE that will be crucial to A-Level Maths.

You need to complete every question to the best of your ability. We have provided answers so that you can mark your work (in green pen) and correct any mistakes that you have made. On the front page of the task, there is a table for you to record your scores. From this, you should then use the RAG (Red, Amber, Green) column to identify which topics you need to focus your revision on before you start year 12.

Once you have identified these areas of weakness, you can then use the following resource https://www.mathsgenie.co.uk/gcse.html to practice GCSE style questions from these particular topics. There are also videos that you can watch if you are struggling to remember the method.

By the time you come back in September, you should be confident in attempting questions similar to those in the Summer Task. You will have a short assessment on your return to ensure that you are ready for A-Level Maths.

Who can I contact for help?

For help – please find any of the following teachers at any point where you need help or advice about the course:

Teacher	Can be found at…
Mr. Miller-Pipe	Maths office (27)
Mrs Bareham	Room 23 or Maths office (39)
Mrs Atkinson	Room 29 or Maths office (39)
Miss Melvin-Smith	Room 34 or Maths office (39)

The Mathematics department is looking forward to meeting you in September.
The journey starts NOW! Good luck with the tasks, and enjoy your summer break.