

Year 12 Mathematics Information

A-level Mathematics

We are delighted you are considering taking A-level maths. We are very proud of our department with its diversity of expertise allowing us to offer A-level and Further Maths. We have achieved excellent results over the last few years and have developed the programme outlined below to help you achieve your potential. Should you have any questions please do not hesitate to speak to Mr Charles-Jones (Head of KS5 Mathematics) or any other member of the department.

Structure

A new Maths A-level qualification is being introduced for 2017. Amongst the changes are the method of assessment, content and style of exams.

In Year 12 you will be studying the AS level topics and successful students will study A-level maths in Year 13. A-level and Further Maths are both final assessment (i.e. not modular) with most students taking their exams in June of Year 13. All entrants will study the compulsory topics of Pure Maths, Mechanics and Statistics with additional topics for those studying Further Maths.

Further Mathematicians will be studying the Maths A-level course in Year 12 and the Further Maths course in Year 13.

The content of the A-level Maths courses will be two thirds Pure Mathematics with the remainder being a mixture of Statistics and Mechanics. There is now a greater emphasis put on problem solving and use of technology. These have been introduced to reflect the use of mathematics in universities and today's workplaces.

Summer work and revision day

You will be given a workbook to complete over the summer holidays and you will need to hand this in during the first lesson. A-level maths requires a lot of dedication and students who fail to complete the work clearly do not have the correct attitude to participate on the course.

We will be working with other schools in the area on a summer revision day which will be late August/early September. You are expected to attend if you are asked.

Entry test

You will be assessed on the summer work at the start of the term to demonstrate that you are ready to study A-level maths. You need to gain at least 80% to pass. If you do not pass the assessment, then you will need to pass a re-sit to continue studying the course.

Folders, Equipment and Presentation

Work for each module will be kept in a folder which is given to each student. It is the student's responsibility to keep these folders neat and properly file all work done. These folders will be subject to checks by module teachers and the Head of Maths. Students need to bring their own lined paper to work on as this will not be provided.

You will be expected to provide your own stationary in every lesson:

Pen, pencil and ruler

Paper (file/plain/grid)

Green pen for marking your own work

Scientific calculator

Assessment

You will have regular 'chapter assessments' at the end of a chapter or a few chapters of a module. These will be exam standard assessments so students will need to have practised past paper questions as well as completing every question in the text book. These assessments help students to gain an early idea of the level of difficulty and time pressure involved in the actual maths exams.

At the end of Year 12, students will sit a mock exam where they have to demonstrate that they are capable of studying A-level maths in Year 13.

Directed Study and Private Study

It is vital that you spend as much time as possible practising mathematics, right from the start of the course. There should **never** be a time that you sit in private study and say you haven't been set any maths work. You **always** have maths work.

A Level maths is 'Advanced' Level maths. It is difficult and therefore requires a lot of commitment. As well as your timetabled lessons students are required to spend at least two lessons (for Maths students) or three lessons (for Maths and Further Maths students) per week studying in a maths room. Students can choose when to do these sessions, depending on what fits best with their timetable. They are flexible study sessions, so the student decides what area of their maths course to work on.

The 2-3 lessons per week do not account for all of the study needed to pass A Level maths. As a minimum, students should be doing the same amount of homework as lesson time.



How to pass – a guide for students

- Complete every question of every exercise. Practice really does make perfect.
- Make sure you are trying past paper questions before every chapter assessment. If you haven't tried exam standard questions before an assessment then you are setting yourself up to fail. Past papers can be found in the school computers under T:/Sixth Form/Mathematics
- Review your assessments – go through each assessment, making sure you understand exactly how you lost each mark. If you don't do this you will make the same mistakes every time.
- Read through the mark schemes thoroughly after practising past papers – you need to understand exactly what the examiner is looking for.
- Always show your workings, and where appropriate, units. A Level mark schemes award more marks for workings than for the final answer.
- Start a study timetable from day one – plan in time for the private study, as well as any other study time needed. Allocate certain study periods to certain modules to ensure that you are covering the full range of your A Level. Getting into a routine makes it much easier to get the work done.



After school assistance and intervention

Email your teacher at any time to ask for help with a specific question, or to arrange a time to meet. After school assistance is offered to all students who would like it. However, students at risk of missing their target, or achieving a grade D or below, or who are missing work from their folders, will be enrolled in intervention classes during their study periods or after school. Enrolment in these classes will be decided on the basis of chapter assessments, mock exam results and any work missing from folders. A register will be taken and parents notified of any absence.



Resources

Textbooks:	Oxford University Press – We will order copies of these and you will pay for them on Parentpay
Past papers:	physicsandmathstutor.com
Videos:	examsolutions.net
Questions by topic:	mathsgenie.co.uk
Online lessons:	mymaths.co.uk
Challenging exam papers:	Solomon papers (available from physicsandmathstutor.com) and IYGB papers (available from madasmaths.com)

How to Read A Level Maths Mark Schemes

If you do a past paper question and want to check your solutions, you might find the mark scheme confusing. This guide should help you make sense of it.

M marks: *method* marks are awarded for *knowing a method and attempting to apply it*.

A marks: *accuracy* marks can only be awarded if the relevant method (M) marks have been earned.

B marks are unconditional accuracy marks (independent of M marks).

Abbreviations

- bod – benefit of doubt
- ft – follow through
- the symbol \surd will be used for correct ft
- cao – correct answer only
- cso – correct solution only. There must be no errors in this part of the question to obtain this mark
- isw – ignore subsequent working
- awrt – answers which round to
- SC: special case
- oe – or equivalent (and appropriate)
- dep – dependent
- indep – independent
- dp – decimal places
- sf – significant figures
- * The answer is printed on the paper (eg in a *show that* question)
- [The second mark is dependent on gaining the first mark

Exam Tips

- State each formula you need before attempting to use it
- Write each step on a new line
- If a question has several parts (a) (b) etc:
 - label each part clearly
 - leave gaps between your answers to each part
 - your answer to one part may well help you do the next part
 - if you can not do part (a) of a question, try part (b)
- Give answers to an appropriate accuracy (if final answer is to 3sf then do all intermediate working to at least 4sf)
- If you have two attempts at a question decide which one you want marked and cross out the other one with a single diagonal line
- If the final answer has a unit (eg cm) then include it
- If you are stuck, try drawing a diagram or sketching a graph.

Wording of Exam Questions

Write down, state: answer should be fairly obvious – little or no work will be needed

Find, Determine, Obtain, Calculate: Some work will be needed, and you will need to show your method

Evaluate: Work out the value of an expression

Verify: You are given the answer – you just have to show that it works

Show that: You have to work out the answer as if it had not been given in the question. You are given the answer because you may need it in the next part of the question.

Prove: A formal proof is required – each line of your answer must follow on logically from the previous line

Explain: This involves writing words (preferably in sentences!)

Interpret: Make a comment that refers to the context of the question

Exact: Not a decimal but a surd, fraction, π etc.

Hence / Hence or otherwise: Hence means you must use the last part of the question to do the next part.

Hence or otherwise means you can use the last part of the question to do the next part (usually a good idea!) but don't have to.

Sketch: Use pencil – don't use graph paper – label the axes – if there are two graphs, label each one

In terms of: This usually means that your answer will not be a number but a mathematical expression including one or more letters.

Give your answer in simplified surd form: Simplified surd form means $\pm b\sqrt{c}$. Bear in mind that c has to be as small as possible so take any square factors out of the root.

Greek Letters

A guide to pronouncing Greek letters commonly used in A Level Maths

α alpha

β beta

μ mu

λ lambda

σ sigma (lower case)

Σ sigma (upper case)

π pi

δ delta (lower case)

Δ delta (upper case)

θ theta

φ phi (lower case)

Φ phi (upper case)