Useful information about A level Mathematics for schools starting sixth forms

Enabling students to succeed in A level Mathematics

Mathematics is a subject in which understanding at each level builds on the understanding students have already developed. Students who have a good understanding of the algebra content of Higher tier GCSE have a good foundation on which to build their A level studies. Successful schools and colleges often provide additional support for students who need to review and strengthen their understanding of GCSE Mathematics at the start of their AS/A level Mathematics studies.

Teachers who are introducing new A level Mathematics courses will find it helpful to visit successful schools and colleges to learn from their experience.

Most students taking A level Mathematics have grade A or A* in GCSE Mathematics, with almost all of the rest having grade B. Students with grade C or B can and do succeed in Mathematics A level but they will usually need additional support at the outset to ensure that they understand and can work with the ideas which they did not fully master at GCSE, especially in algebra.

Not just for mathematicians

Over 90% of students who do A level Mathematics do not go on to do mathematics degrees. The mathematics they learn and the skills they develop by doing A level Mathematics are essential for degree level study in subjects such as physics and engineering and are also widely used in other subjects such as economics, chemistry, biology and social sciences. Students working towards degrees in these subjects are often surprised by how much mathematics they use at university. Numbers taking A level Mathematics have been growing strongly in recent years, increasing from around 50 000 in 2003 to more than 85 000 in 2012.

The structure of A level Mathematics

Since 2004, AS Mathematics has consisted of three units: C1, C2 and an applied unit. To complete the A level, students take a further three units: C3, C4 and another applied unit. C1 to C4 are Core units; the total content of C1 and C2 is almost identical for all awarding bodies; similarly for C3 and C4. There is a choice of applied units drawn from 3 strands, decision mathematics, mechanics and statistics; the possible units are detailed in awarding body specifications for A level Mathematics.

New specifications for A level Mathematics are likely to be introduced for first teaching in the near future, probably in September 2015.

Further Mathematics

Students who are taking A level Mathematics can take an additional AS or A level in Further Mathematics. Just as for A level Mathematics, numbers of students taking Further Mathematics have been growing strongly in recent years. Since 2003, A level Further Mathematics numbers have increased by 149%, to over 13 000.

A qualification in Further Mathematics is very useful for students who go on to university to take a degree in a highly mathematical subject such as engineering, sciences or economics as well as mathematics itself. A level Further Mathematics is required for entry onto prestigious degree courses at some leading universities.

AS Statistics

Students who decide to study for degrees in geography, psychology, sociology, business studies and biology will find it useful to have studied some statistics. AQA and OCR both offer an AS Statistics qualification, which students could take in year 13. AQA also offers a full A level in Statistics. These qualifications are designed to be accessible to students who have grade C in GCSE Mathematics; the emphasis is on practical applications of statistics rather than on the underlying mathematical theory.

Which specification to choose?

Ofqual regulates qualifications in England and monitors the awarding of A level grades to ensure that a student is just as likely to get a particular grade on any of the different A level Mathematics specifications. There is more detail about how Ofqual does this on their website: www.ofqual.gov.uk/how-we-regulate/

If your school is going to start a new A level course in Mathematics, you will find it helpful to visit other schools and colleges to see what they do and how they do it. This will enable you to make informed decisions about how best to structure your course.

Support for teachers and students

Professional development courses for both new and experienced teachers of A level Mathematics are available through MEI:
mei.org.uk/?section=teachers&page=cpd

The Further Mathematics Support Programme (FMSP) is a national programme funded by the DfE to support the teaching of AS and A level Further Mathematics and to promote increased uptake of AS and A level Mathematics and Further Mathematics. Schools offering A level Mathematics will find the FMSP a useful source of support and expert advice:
furthermaths.org.uk

Extensive teaching and learning resources to support both teachers and students of AS and A level Mathematics and Further Mathematics are available through MEI:
mei.org.uk/?page=onlineresources