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For immediate release

Numbers taking mathematics A levels and Core Maths qualifications increase: MEI congratulates students and thanks teachers for their achievements in maths education after a very difficult year

The Covid crisis and resulting school and college closures mean this has been a very difficult year for education. However, some very positive news is the increased numbers of students taking A level Mathematics (up 2.5% to 94,168), A level Further Mathematics (up 3% to 14,966) and Core Maths qualifications (up at least 30.1% to 11,745, with some data still to be added).

Congratulations to all students on their hard work studying for their AS and A level Mathematics, AS and A level Further Mathematics and Core Maths qualifications. It is unfortunate that they were not able to complete their courses and sit their examinations as intended. The early decision to cancel the examinations this year was helpful, removing uncertainty and so reducing worry for students and their teachers.

Thank you to all the mathematics teachers who have supported students on their courses over the last two years, including adapting their work to help students to learn remotely during the school and college closures.

Charlie Stripp, MEI Chief Executive and Director of the NCETM, commented:

> *"Students who studied for mathematics AS/A levels, or for Core Maths qualifications, have equipped themselves well for progression to higher education or employment, even though they weren't able take their exams this summer. It's hugely frustrating for students and their teachers that the Covid crisis meant that exams couldn't go ahead this summer. However, the main point of education isn't to pass exams, it's to enable students to learn things that help them as individuals, and society as a whole, to be successful. Maths education is crucial to this.*
>
> *It's brilliant news that numbers entered for A level Mathematics and A level Further Mathematics both increased this year. Students with these qualifications are likely to progress to higher education and careers in STEM disciplines or finance that are vital to our national economy.*
>
> *The increase in Core Maths entries, up by more than 30% to almost 12,000, is also excellent news. Core Maths is designed to equip all young people with a grade 4 or above in GCSE Mathematics, who do not wish to study for AS/A level Mathematics, with the quantitative skills they need to use maths and statistics with confidence in*

real life contexts. This is hugely valuable for their future success, both in the workplace and for further study, whether academic or vocational.

This year's growth in the number of students studying maths beyond GCSE level is very encouraging. The demand for advanced mathematical skills and quantitative analysis across a wide range of degree programmes and in the workplace, and the need to understand numbers and data to make sense of the world, continue to increase. We must do all we can to ensure participation in maths education at this level continues to grow."

The Royal Society has recently published a report on the importance of studying mathematics post-16.

Its key recommendations are:

1. All universities should signal the importance of level 3 mathematics qualifications across a wide range of subjects.
2. University departments whose undergraduate degree courses do not require level 3 mathematics qualifications should promote the value of Core Maths as a complement to a student's level 3 choices.
3. All universities should include signalling the value of level 3 mathematics qualifications within their existing widening participation programmes, activities and accompanying resources.

MEI strongly supports these recommendations and is pleased to note that the universities of Bath, Sheffield and York have already taken steps to ensure clear signalling of the importance of AS and A level Mathematics, AS and A level Further Mathematics, and Core Maths qualifications.

The sections below provide analysis and comment on the results.

AS and A level Mathematics and Further Mathematics – growth in entries

Core Maths – entries up by over 30%

Advanced mathematics participation gender gap

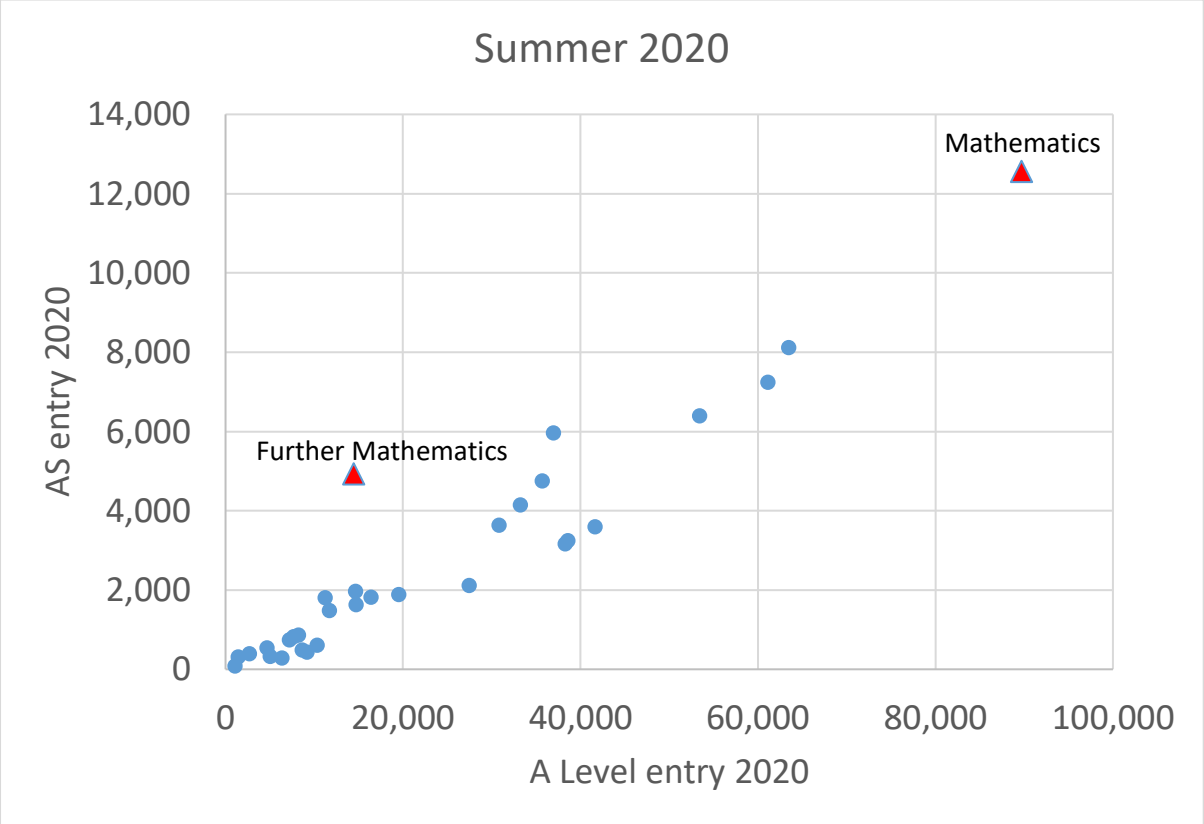
A* grades in A level Mathematics and Further Mathematics

AS and A level Mathematics and Further Mathematics

After last year's dip in numbers following the introduction of the new AS/A level Mathematics and Further Mathematics qualifications, it's excellent that A level entries are increasing again (by 2.5% and 3.0% respectively), especially when overall entries to A levels across all subjects have fallen by 2.6%.

AS numbers in Mathematics and Further Mathematics are particularly interesting. Since the A level reforms, which de-coupled AS assessment from A level, AS numbers across all subjects have plummeted. However, AS Mathematics and AS Further Mathematics are recognised as useful qualifications in their own right, taken alongside A levels in other subjects. This is reflected in the Advanced Mathematics Premium, which encourages schools and colleges to increase level 3 mathematics participation through a funding

incentive. The scatter graph below suggests that schools and colleges are offering AS Further Mathematics as a separate qualification in its own right, which is excellent news. The large numbers taking AS Mathematics are also very encouraging.



The scatter diagram is based on Ofqual data about examination entries in England for 2020, published in June 2020. Mathematics has the highest number of entries at both AS and A level, by quite a large margin. The graph shows clearly that for Further Mathematics the number of AS entries compared to the number of A level entries is very high compared to other subjects.

Analysis of AS and A level Mathematics and Further Mathematics entries for 2020

The Advanced Mathematics Support Programme, led by MEI, provides extensive professional development support and a wide range of enrichment opportunities for students to help schools and colleges offer AS and A level Mathematics and Further Mathematics, and increase uptake of these important qualifications.

For those students who plan to take advantage of the opportunity to sit their A level Mathematics or Further Mathematics examinations in October, MEI is offering a special rate for access to its Integral online learning platform, to support their preparation for the examinations.

Core Maths

This year's strong increase in Core Maths numbers by over 30% to around 12,000 is very welcome.

Core Maths qualifications are increasingly valued by students and teachers. Universities such as Bath, Sheffield and York already provide reduced offers for students with a level 3

mathematics qualification, such as AS or A level Mathematics or Core Maths, in recognition of their well-developed quantitative skills. These skills are vital for all citizens, enabling them to participate fully in society and giving them valuable transferable skills, which help support our national economy.

The recently published Royal Society Report, Signalling the value of level 3 mathematics qualifications highlights the usefulness of Core Maths and encourages clear recognition and signalling from universities of the value of and importance of Core Maths qualifications.

We eagerly anticipate the outcomes of the Leeds University report, funded by the Nuffield Foundation, The early take up of Core Mathematics: successes and challenges, on 18 August. This three-year research project was carried out by the University of Leeds and will provide recommendations to support the growth in participation in Core Maths.

The Advanced Mathematics Support Programme, led by MEI, offers support to help schools and colleges offer Core Maths. Schools and colleges registered with the AMSP (which is free), can access a purpose-written online platform of teaching and learning resources to support Core Maths. The platform is continually being improved and updated.

Analysis of Core Maths entries

Advanced mathematics participation gender gap

Taking mathematics beyond GCSE level (AS/A level Mathematics and Further Mathematics and Core Maths) supports progression to higher education and opens doors to rewarding careers[1,2]. It is therefore a cause of concern that there is a persistent gender imbalance in participation in A level Mathematics and Further Mathematics (approximately 60% male : 40% female for A level Mathematics and 70% male : 30% female for A level Further Mathematics).

These gaps have narrowed very slightly this year: A level Mathematics narrowed from 61.2% male : 38.8% female to 60.6% male : 39.4% female and A level Further Mathematics narrowed from 71.4% male : 28.6% female to 71.0% male : 29.0% female.

Addressing the participation imbalance will widen career options for young women and help to narrow the gender pay gap.

The Advanced Mathematics Support Programme, led by MEI, supports schools in promoting AS/A level Mathematics and Further Mathematics and Core Maths to girls in Years 10 and 11.

A* grades in A level Mathematics and Further Mathematics

Several leading universities require prospective undergraduates to achieve an A* grade in A level Mathematics and/or A level Further Mathematics in order to gain a place on prestigious degree programmes in mathematics and other STEM subjects.

To ensure all students can access specialised support to help them achieve an A* grade in A level Mathematics, MEI has worked with Imperial College, London on a project designed to improve students' understanding of the subject requirements for an A* grade in A level Mathematics and to develop the higher level mathematical thinking skills needed to answer

the most demanding questions. The aim is to improve students' opportunities to access STEM degrees at leading universities, including Imperial College.

The project involved developing a series of four free online courses. A selected group of students from schools in less advantaged circumstances also attend the mA*ths Online Programme, where they receive face-to-face support at Imperial College whilst working through the online courses. Teachers from schools engaging with the mA*ths Online Programme are invited to take part in an online professional development course, which is designed and run by MEI.

This initiative had proved to be highly popular with teachers and students and Imperial College recently announced plans to work with MEI to develop equivalent support for A* grade in A level Further Mathematics.

Footnotes

[1] https://londoneconomics.co.uk/wp-content/uploads/2015/03/London-Economics-Report-Returns-to-GCE-A-Levels-Final-12-02-2015.pdf
[2] https://www.gov.uk/government/publications/smith-review-of-post-16-maths-report-and-government-response

Notes to editors

1. MEI is an independent charity committed to improving mathematics education and is also an independent UK curriculum development body.
2. MEI is a major provider of professional development for mathematics teachers and manages the National Centre for Excellence in the Teaching of Mathematics (NCETM) in consortium with Tribal Education.
3. Charlie Stripp has been Chief Executive of MEI since 2010; since March 2013 he has also been Director of the NCETM.
4. The Advanced Mathematics Support Programme (AMSP) is a government-funded initiative, supported by the Department for Education and is managed by MEI with support from Tribal Education. It follows on from the very successful 'Further Mathematics Programme (FMSP)', providing support for students and teachers for AS and A level Mathematics and Further Mathematics, and in addition providing support for Core Maths.
5. Core Maths qualifications are designed for students who have achieved a standard pass (grade 4 or above) in GCSE Mathematics, but who do not intend to take AS/A level Mathematics. They enable learners to strengthen and develop the mathematical knowledge and skills they have learnt at GCSE so that they can apply them to the problems that they will encounter in their other level 3 courses, further study, life and employment. Core Maths qualifications are increasingly valued by universities. They carry the same UCAS point tariff as AS levels.