Executive Summary

Investigating the impact of curriculum and funding changes on Level 3 mathematics uptake

Comparison of A level Mathematics/ Further Mathematics and Core Maths uptake in 2016-17 and 2017-18

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MEI®
Mathematics Education Innovation

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Background

The cohort of students who entered Year 12 in September 2017 was the first to experience the recent major changes to England's mathematics curriculum.

- A new curriculum and grading system for GCSE Mathematics
- A new linear AS/A level curriculum for Mathematics and Further Mathematics

These follow changes to the funding regime for post-16 education, the de-coupling of AS and A level qualifications and the introduction of Core Maths qualifications.

Concern has been expressed that these changes might lead to a reduction in the uptake of Level 3 mathematics.

The true picture of Level 3 mathematics participation rates for the post-16 cohort starting in academic year 2017-18 will not be known until examination entry figures are released in the summers of 2018 and 2019.

In order to give early notice of any underlying changes in participation rates, MEI undertook a national online survey of schools and colleges in December 2017, one term into the first academic year of teaching for the new mathematics AS/A level qualifications.

This report

Valid responses were received from 437 institutions that offer A level Mathematics. Our analysis suggests that the responses were reasonably representative of the national population of schools and colleges offering Level 3 mathematics.

The focus of the questions was on aspects of the situation that could be measured objectively. However, there were open sections in which many respondents wrote about subjective matters, such as students' confidence and motivation.

The report sets out findings from the survey.

Responses to the objective questions are summarised in data tables and charts.

The opinions expressed by respondents are covered through a large number of quotes.

The report ends with 10 short case studies based on the responses from particular institutions.

Key findings

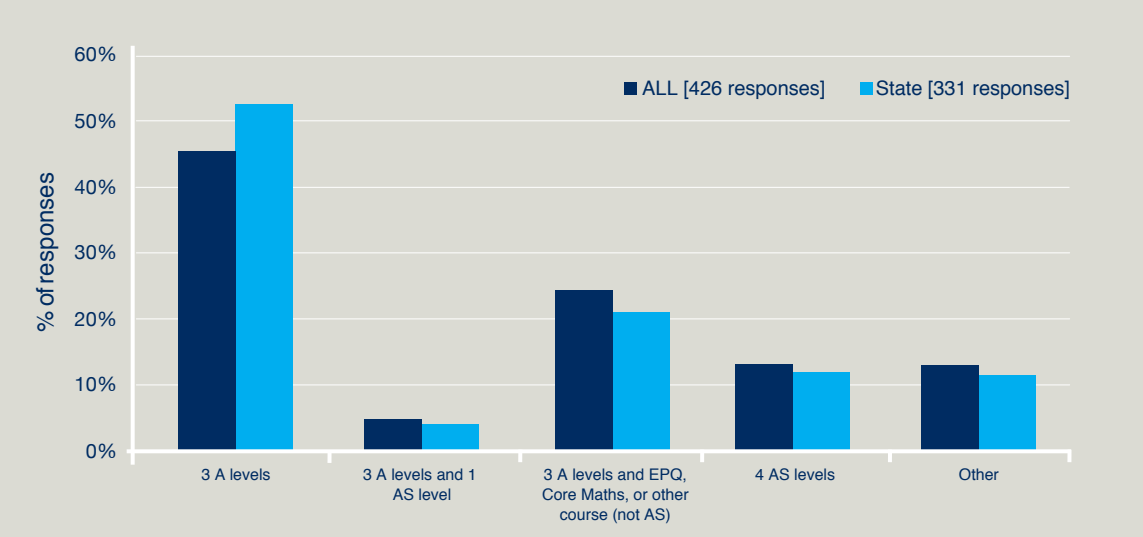
The survey collected data about the Year 12 student cohorts in academic years 2016-17 and 2017-18.

Analysis was conducted across four major themes:

1. Institutional policy on entries to AS/A levels
2. Changes in entry requirements for students taking AS/A level Mathematics and Further Mathematics
3. Changes in participation and provision in AS/A level Mathematics and Further Mathematics
4. Changes in participation in Core Maths

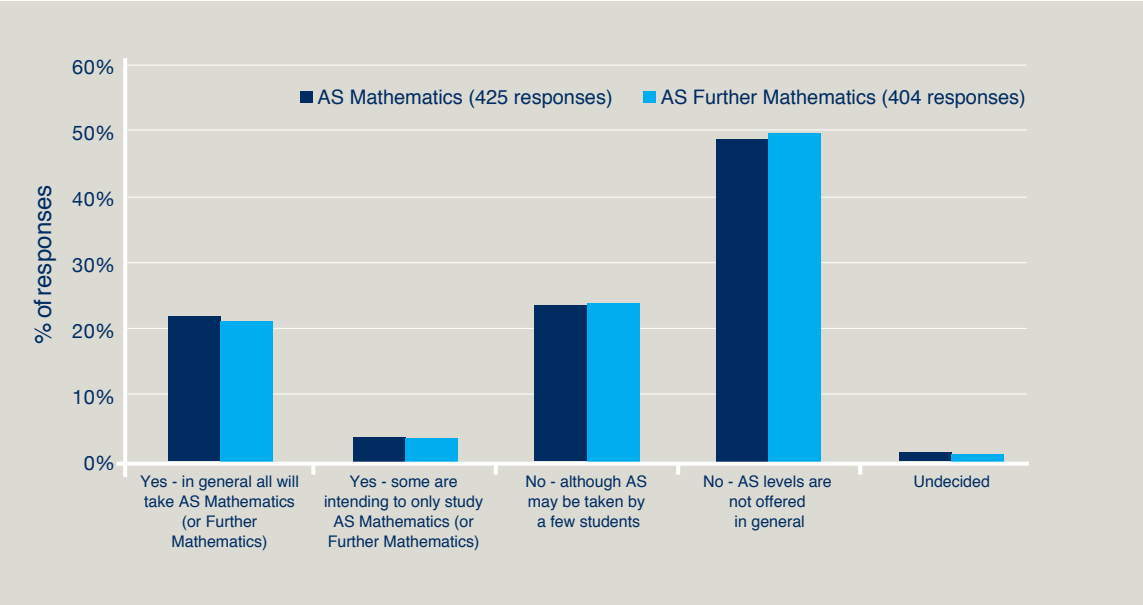
1. Institutional policy on entries to AS and A levels

The most common 'standard offer', for all subjects, across all institutions in the survey was 3 A levels only; this was followed by 3 A levels and EPQ, Core Maths, or other course (not AS). Over 60% of state sector Sixth Form colleges/FE colleges offer three A levels only[1].



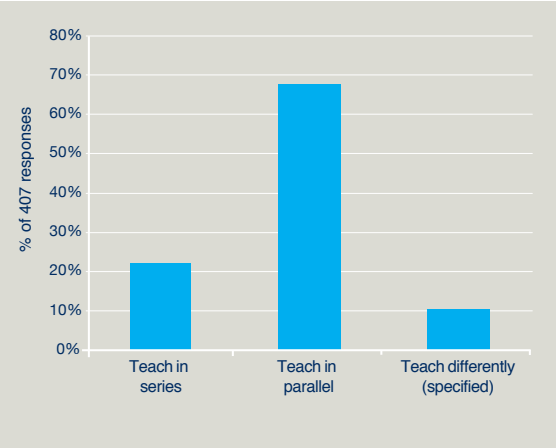
Almost three quarters of responses indicated that 'AS levels are not offered in general' or that they 'may only be taken by a few students'.

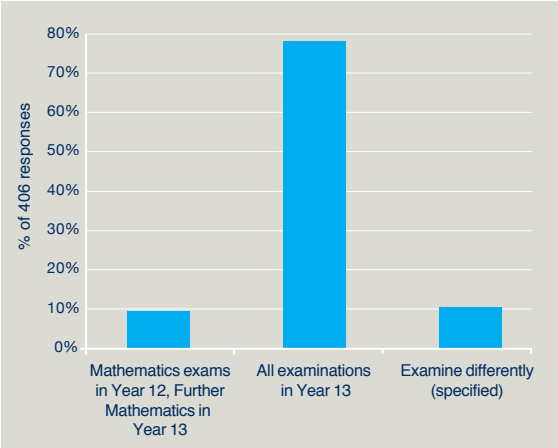
Responses to questions in the survey indicate the impact that institutions' general policies are having on AS levels in Mathematics and Further Mathematics. In only around a quarter of institutions are AS levels in either subject being offered as part of a standard AS/A level programme.



[1] A full breakdown by institution 'type' can be seen in table 5.

The survey asked how the teaching of Further Mathematics is organised. For those institutions in the survey offering A level Further Mathematics around two-thirds teach A level Mathematics and Further Mathematics in 'parallel', meaning they teach both subjects equally across Year 12 and Year 13. Almost four-fifths of those in the survey that offered A level Further Mathematics planned to enter students for both A level Mathematics and Further Mathematics examinations at the end of Year 13.

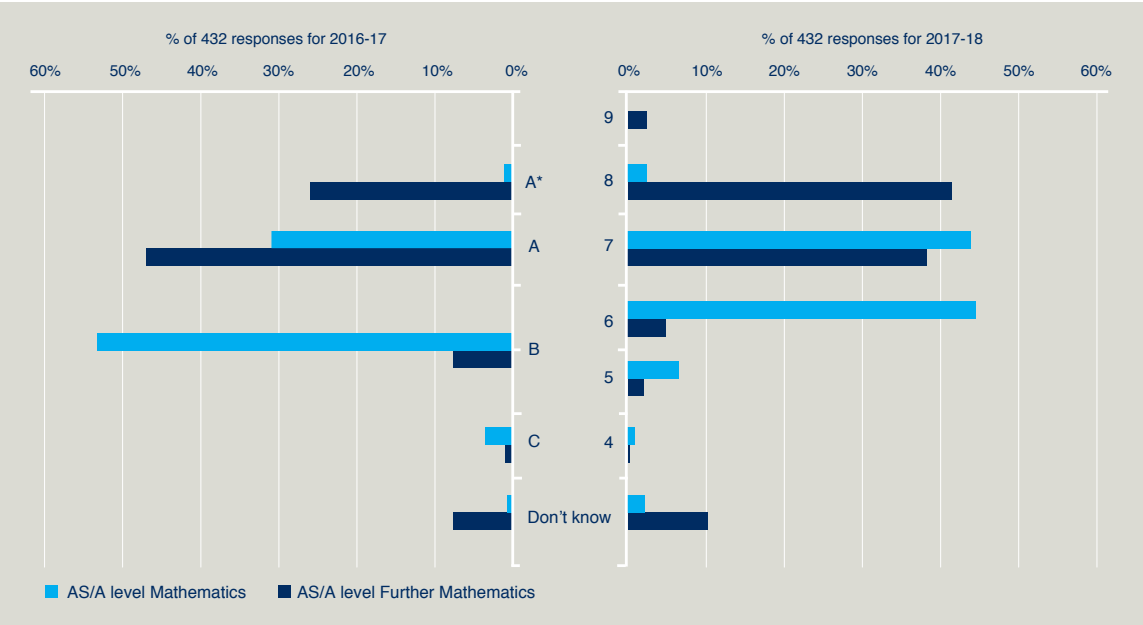




2. Changes in entry requirements for students taking AS/A level Mathematics and Further Mathematics

Entry requirements in institutions in the survey have increased for both AS/A level Mathematics and AS/A Level Further Mathematics.

The cumulative percentage requiring grades 7 or 8 in 2017-18 is more than 10 percentage points higher than required A or A* for Mathematics in 2016-17[2]. For Further Mathematics the cumulative percentage requiring grades 8 or 9 in 2017-18 is nearly 20 percentage points higher than required A* in 2016-17.

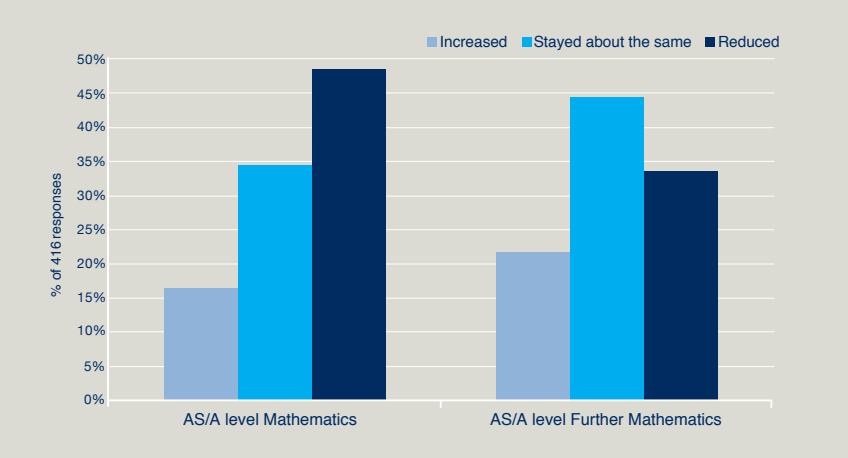


[2] Ofqual guidance on changing of GCSE grades: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/638308/Grading_new_GCSEs_from_2017.pdf

3. Changes in participation and provision in AS/A level Mathematics and Further Mathematics

Overall, almost half of the respondents indicated that the uptake of AS/A level Mathematics had reduced in their institutions for the academic year 2017-18, when compared with 2016-17.

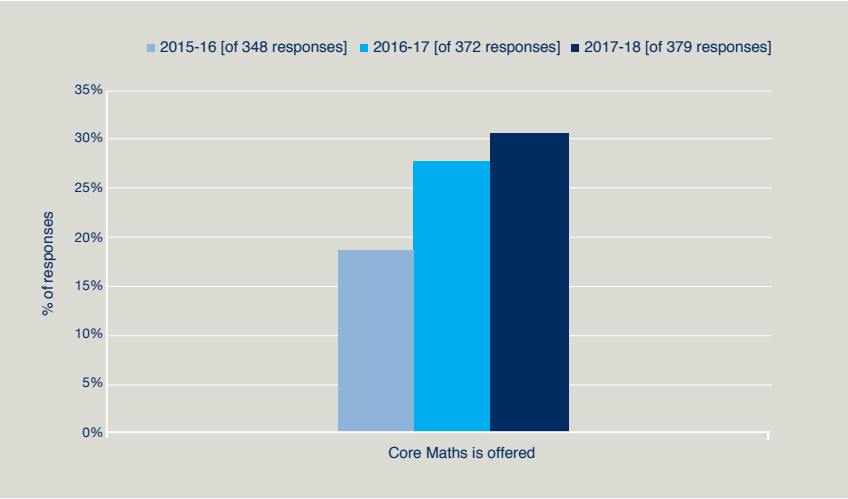
The mean number of Year 12 students per institution in the survey studying AS/A level Mathematics decreased by 8.2%, from 48.5 in academic year 2016-17 to 44.5 in 2017-18. By contrast, the equivalent figure for AS/A level Further Mathematics increased by 3.6% from 11.2 in 2016-17 to 11.6 in 2017-18.



4. Changes in participation in Core Maths between academic years 2015-16 and 2017-18

The proportion of institutions in the survey where Core Maths is offered has increased from 18.7% in 2015-16 to 30.6% in 2017-18.

In institutions in the survey offering Core Maths, the mean number of Year 12 students participating in Core Maths increased from 13.6 in academic year 2016-17 to 17.4 in 2017-18.



Conclusions

Broad conclusions suggested by the survey data are:

In academic year 2017-18

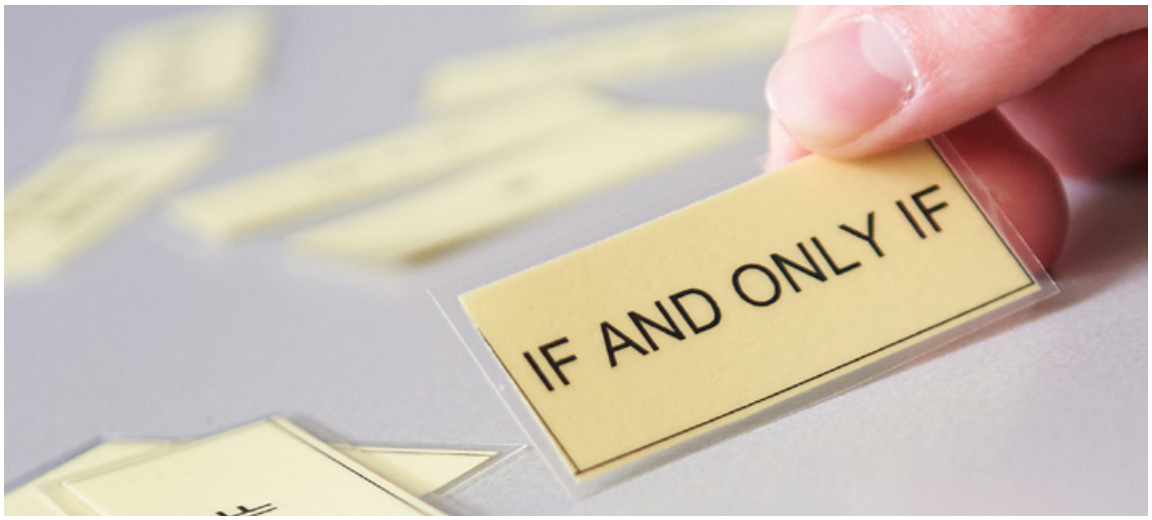
- Most institutions offer Year 12 students on A level programmes the opportunity to study 3 A level subjects
- Most institutions do not offer AS levels

Between academic years 2016-17 and 2017-18

- Institutions have increased the GCSE Mathematics grade they require students to achieve before allowing them to start AS/A level courses in Mathematics and Further Mathematics
- AS/A level Mathematics uptake has reduced
- AS/A level Further Mathematics uptake has remained stable
- Core Maths uptake has increased.

However, caution should be exercised when interpreting the outcomes of the survey. This report is based around student participation soon after the start of the first year of a new situation. It is not possible at this stage to say whether the data will be typical of subsequent years. Nor is it possible to accurately predict the proportion of the students referred to in the report who will go on to enter mathematics examinations in 2018 and 2019. It is also the case that the survey respondents were self-selecting and the survey may have under or over represented different types of institution.

The report includes many of the opinions expressed by respondents. Time will tell whether their hopes or concerns are well founded. This report provides a base line from which judgements about them can be made.



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