

Written evidence from the Campaign for Mathematical Sciences (MTS0001)

1. About us

- 1.1 The Campaign for Mathematical Sciences (CaMS) exists to advance the mathematical sciences for discovery, innovation and the economy. We bring together mathematicians of all disciplines, alongside leaders from education, industry and politics to engage with policy makers and provide specialist advice in maths policy.
- 1.2 Maths education is vital to the UK Government's growth aspirations. There needs to be stronger signals of the support from Government, together with a coherent strategy that joins up maths education with research, innovation and knowledge exchange. We urge the Science and Technology Committee to support our call for a National Strategy for Mathematics alongside immediate interventions in higher education and AMSP cuts which will affect the long-term maths teacher pipeline.
- 1.3 We have focused our response on the lines of questioning posed during the session on 4th March where we have a particular perspective.

2. Summary

- 2.1 A thriving maths ecosystem is fundamental to the Government's growth ambitions. In 2023, the mathematical sciences contributed £495 billion to the UK economy – 20% of the UK's GVA.¹
- 2.2 Many of today's cutting-edge innovations are driven by mathematical sciences research, including in AI, energy, life sciences and defence and security. In 2019-23, there was a 6.2% growth in demand for jobs requiring undergraduate maths skills.² Polling for the Maths Horizons Project found that 94% of employers anticipate placing at least as much emphasis on candidates' maths skill when hiring in two years, and 56% anticipate maths skills becoming more or much more important³.
- 2.3 Maths graduates are among the most productive in the UK, and maths is ranked in the top three subjects for graduate earnings. At each incremental level of study, a maths qualification is associated with a higher average salary.⁴

¹ <https://www.acadmthsci.org.uk/2024/10/22/new-analysis-shows-that-mathematical-sciences-supercharges-uk-economic-growth/>

² Lightcast; Note: Growth in demand is proxied by number of published job postings, as at Dec 2019- 23.

³ <https://www.publicfirst.co.uk/new-polling-for-the-maths-horizons-project.html>

⁴ Hodge, L, Little, A, Weldon, M (2021), [Department for Education](#). Noyes, A, Adkins, M (2017). [University of Nottingham](#). Britton, J et al. (2020), [IFS](#). Britton, J. et al (2020), [IFS](#).

- 2.4 However, without an adequate pipeline of mathematicians and advanced maths skills, there is no possibility of meeting the Government's ambition to replicate the success of Silicon Valley or the Boston Cluster in the UK.
- 2.5 The Government's stated commitment to AI and tech is promising but recent decisions made around mathematics contradict this, as set out in Marcus du Sautoy's recent article in the Financial Times⁵ supported by CaMS. This includes cuts to the Advanced Mathematics Support Programme; university cuts and closures; the cancellation of the exascale super-computer in Edinburgh; as well as the decision not to fund the Academy for the Mathematical Sciences.

3. The Advanced Mathematics Support Programme (AMSP)

- 3.1 Ensuring the best possible maths education for students post-16 is crucial to strengthening the wider graduate pipeline and supporting high growth sectors including AI and defence. Boosting progression to maths degrees should be a crucial part of the government's AI strategy, as should supporting high-attaining students.
- 3.2 The Advanced Mathematics Support Programme (AMSP) was designed to increase uptake in A-level maths and A-level further maths, and progression to maths degrees. The programme carries out vital work in supporting maths teachers in state schools, including in areas of low social mobility and low participation.
- 3.3 The programme is considered highly effective and directly attributed to the increase in students studying A-level maths. Since it was introduced in 2009, entries for A-level maths in England rose 64,500 in 2009 to more than 98,000 in 2024; the number of students taking A-level further maths increased from 9,400 to almost 17,000 over the same period; and since 2018, the number of students in England awarded certifications in core maths almost doubled from 6,600 to 12,500.⁶
- 3.4 There has been widespread concern amongst schools, the mathematical sciences community and industry at the recent cuts to AMSP and the lack of detail over the future programme.^{7 8}
- 3.5 XTX Markets has subsequently stepped in temporarily fund the portion of the AMSP that helps state school students to prepare for university entrance tests, such as STEP and TMUA, which are increasingly required for admission.⁹ It is essential that the AMSP support continues, giving all state school students a fair opportunity, not just those whose parents can afford private tuition.

⁵ [Cuts to maths are a national miscalculation](#)

⁶ [Dismay at plan to cut back A-level maths support programme](#)

⁷ [Government must check its sums on maths investment](#)

⁸ [Times letters: Kemi Badenoch needs to show more fighting spirit](#)

⁹ <https://schoolsweek.co.uk/government-must-check-its-sums-on-maths-investment/>

XTX Markets' funding will enable 4,000 students to continue to access online and in-person courses held at universities.

- 3.6 We are calling on the Department for Education to re-assess the cuts to the AMSP and reinstate funding for the university entrance tests. Working together with the education sector and industry, the Government has an opportunity to build an improved system for advanced maths which CaMS is keen to help develop.

4. University cuts and closures

- 4.1 Closures and cuts to mathematics departments at universities are a significant concern. The cumulative impact of these closures will not only reduce opportunities for young people to study mathematics across the country but also puts the Government's growth plans at risk.
- 4.2 While mathematics is the most popular A-level, the proportion of undergraduates studying mathematical sciences is falling. Research commissioned by CaMS from DataHE, a leading analyst of university data, forecasts that the decline in UK maths undergraduate entrants will continue at its current rate until 2030, then accelerate rapidly after 2030 as the number of UK undergraduate entrants begins to decline. Between 2030-2035, UK maths undergraduate entrants are forecast to fall from 7,095 in 2030 to 5,620 in 2035. ¹⁰
- 4.3 Importantly, maths undergraduates are increasingly concentrated in research-intensive universities, especially in the Russell Group. Student numbers are falling in mid- and lower-tariff institutions, especially post-1992 institutions. Lower tariff department closures will disproportionately affect students from lower income backgrounds.¹¹¹²
- 4.4 In January 2025, a further three UK universities announced that maths is included as in scope for the redundancy programmes; Cardiff University, the University of Sheffield and the University of Reading. This follows similar announcements at Aston, Birkbeck, Brighton, Huddersfield, Hull, Kent, Kingston, Leicester and Oxford Brookes.
- 4.5 There is significant strength of feeling amongst the mathematical sciences community about the impact of such closures. This was demonstrated by the open letter¹³ opposing cuts at Cardiff University, which was organised by CaMS and has been signed by over 4,000 leading mathematicians. This includes 17 Fields

¹⁰ DataHE commissioned research

¹¹ Data Walk | The Maths Summit 'Disadvantaged pupils and girls attain less highly' and 'Undergraduate Provision'

¹² [21ee65_af72561a1d694babafc8a2cb76e30e7a.pdf](#)

¹³ [d28465_f208128f7dca402fb56be5b411321cd6.pdf](#)

Medallists and two Nobel Prize winners and was reported in The Times¹⁴.

- 4.6 CaMS is leading a number of initiatives to support new and innovative degree programmes. The development of our Maths Degrees for the Future programme¹⁵ allows university departments to bid for grants of up to £500,000 to fund innovation in maths teaching and curriculum design for undergraduate degree programmes. The aim is to increase the overall pool of students going into mathematical science degrees, ensuring that maths departments at all levels thrive and equipping graduates with the flexibility to move into a wide range of careers and subject areas. Grants of up to £2.8m have been approved in principle.
- 4.7 However, increasing the numbers of maths undergraduates needs to be a joint endeavour from mathematicians, universities and the Government. The Government must take a view on the sustainability of the sector and the strategic importances of mathematics for the UK.

5. The Academy for Mathematical Sciences

- 5.1 Government should provide funding for the Academy as a key part of the infrastructure that identifies and takes forward priorities for **the** mathematical sciences community. **The Academy delivers value by providing** an authoritative and coherent voice for the mathematical sciences, bringing together academics, business industry and government, and educators.

6. Teacher recruitment and retention

- 6.1 There is a shortage of maths teachers entering the profession, and of specialist maths teachers in state schools generally¹⁶. In 2024/25, there were 2272 Maths ITT entrants, around 800 short of the Government target.
- 6.2 Research for our Maths Summit found that 45% of secondary schools have non-specialists teaching at least some maths lessons, and that 52% of secondary maths lessons are taught by a teacher without a degree-level qualification in maths.¹⁷
- 6.3 However, we are deeply concerned that university cuts will impact the future pipeline of maths teachers.
- 6.4 In 2024, CaMS commissioned Professor Paul Wakeling, from the University of York, to explore employment outcomes for maths undergraduate and postgraduate students, with a particular focus

¹⁴ [Mathematicians call for rethink on cuts at Cardiff University](#)

¹⁵ [Maths Degrees for the Future Grants | Projects | Campaign for Mathematical Sciences](#)

¹⁶ [21ee65_26344990ccff44afa78c0a10f09adb2c.pdf](#)

¹⁷ NFER, 2022.

on the numbers entering the teaching workforce. Professor Wakeling found that maths undergraduates are increasingly concentrated in research-intensive universities, especially in the Russell Group. Conversely, student numbers are falling in mid- and lower-tariff institutions, especially post-1992 institutions. For example, 58% of maths first-year undergraduate enrolments were in Russell Group universities in 2021/22. This is a sharp contrast to the distribution of students across all subjects, where 27% of total undergraduate enrolments are in Russell Group universities and the majority are in post-1992 universities.¹⁸

- 6.5 Crucially, maths graduates from post-1992 universities are over three times more likely to become teachers than those from top tier universities. Indeed, 17.4% of maths graduates from post-1992 institutions enter secondary teaching, compared to just 2% from Golden Triangle universities and 5.8% from Russell Group universities.¹⁹
- 6.6 Professor Wakeling's findings reiterated those of the Ortus Research Report²⁰ commissioned by the Council for the Mathematical Sciences and the Heads of Departments of Mathematical Sciences which found that the proportion of employed mathematical sciences graduates from the lowest entry requirement institutions working in education professions (including teaching) 15 months after graduation was notably higher than the proportion of employed graduates from the highest entry requirement institutions (25% versus 8%).
- 6.7 The diminishing number of maths graduates from lower tariff universities will make teacher recruitment increasingly difficult, with serious implications for young people and their ability to develop the mathematical skills needed to succeed in an increasingly data-driven world.

7. Maths curriculum fit for the future

- 7.1 At a fundamental level, AI is simply mathematics; linear algebra, calculus, probability. Importantly, a deep knowledge of foundational mathematics and non-routine problem-solving will be the most valuable, general-purpose tools to adapt to this rapidly developing technology.
- 7.2 The curriculum and assessment must be designed to prioritise creativity and problem-solving, not just operational fluency. This is about more than equipping with the fundamental knowledge, it is also about giving students the opportunity to "think like a mathematician" and to enjoy maths. The maths circles run by Axiom Maths are a good example of this.

¹⁸ [21ee65_7c9930582c15417ebbd6acc94479bd97.pdf](#)

¹⁹ Wakeling, Paul, "Outcomes from UK Mathematics Degrees", [University of York](#), November 2024.

²⁰ [CMS_HoDoMS_MathematicalSciencesRecruitmentDiversity_FINAL120124.pdf](#)

7.3 The Maths Horizons Project, an independent, rapid review of the maths curriculum and assessment system in England, chaired by Professor Lord Lionel Tarassenko will produce recommendations for systemic improvement that can respond to the demands of a rapidly changing economy and AI-led innovation. The review is informed by over 40,000 insights from stakeholders, including students, parents, teachers, and employers. These have then been discussed and debated with experts. In April 2025, the Maths Horizons final report will create a series of evidence-informed recommendations, which should be considered by the DfE's curriculum and assessment review, led by Professor Becky Francis.

8. Conclusions and recommendations

8.1 The Government must send a stronger signal on its support for mathematics. At present, decision making appears uncoordinated and contradictory. We are calling for:

8.1.1 A National Strategy for Maths to strengthen the UK's global leadership in the mathematical sciences. A cross-government strategy should provide joined up thinking on teaching, research, skills, innovation and knowledge transfer.

8.1.2 Support for universities to prioritise maths teaching and to prevent further course closures. An action plan is needed to maintain a healthy ecosystem of maths degrees for the future, with strong and sustainable provision in every region.

8.1.3 Investment in recruiting, developing and retaining maths teacher talent. Maths should be the top priority in the government's strategy to recruit 6,500 new teachers. All options should be considered, including pay, incentives, professional development and working conditions.

8.1.4 The Department for Education to put in place an improved system for advanced maths which CaMS is keen to help develop. The government would have no shortage of allies to help with these efforts, from schools and trusts to the growing coalition of charities, companies and funders that are eager to assist.