

# The mA\*ths and Further mA\*ths Online Programmes

Dr Jenny Cooke, Mentoring and Tutoring Programmes Manager  
Outreach



## PROGRAMME AIMS

### **Primary Aims:**

Increase the proportion of participants:

- Achieving A/A\* in Maths or Further Maths
- Progressing to STEM degrees at highly selective universities

### **Secondary aim:**

- Ease transition to university for those starting mathematics- based degrees

All Imperial undergraduate degrees other than Medicine and Life Sciences require A Level Maths and many offers are for A\*

Students in disadvantaged areas are less likely to gain an A\* in mathematics than those in more advantaged areas

Disadvantage gap is greater outside London

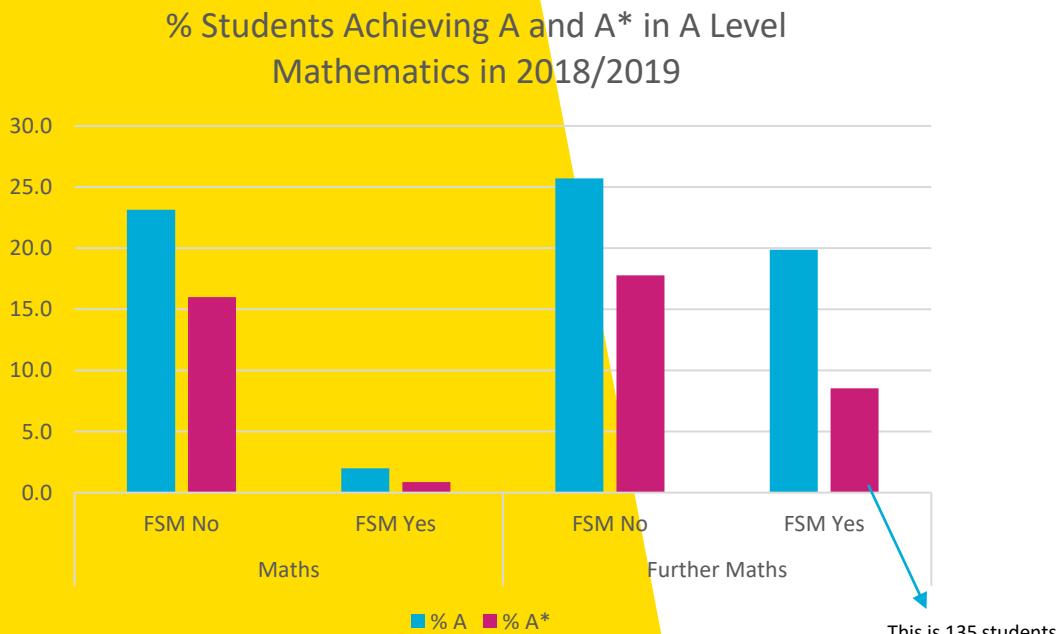
## THEORY OF CHANGE

CHALLENGE	TARGET AUDIENCE	PROXY METRICS	EVIDENCE BASE	ASSUMPTIONS
Limited support available for students from disadvantaged backgrounds	Disadvantaged students with potential to excel in Maths or Further Maths	Disadvantage measures (as defined in selection criteria) High prior attainment	Strong evidence for: Use of mentors in supporting attainment Sustained contact programmes	Unclear evidence on impact of online v in person
More likely to attend schools with limited capacity to teach challenging curriculum topics				What approaches encourage engagement in ongoing virtual content?
Lack of resources for out of school support				What makes an excellent tutor? What factors influence choice to continue with Further Maths?

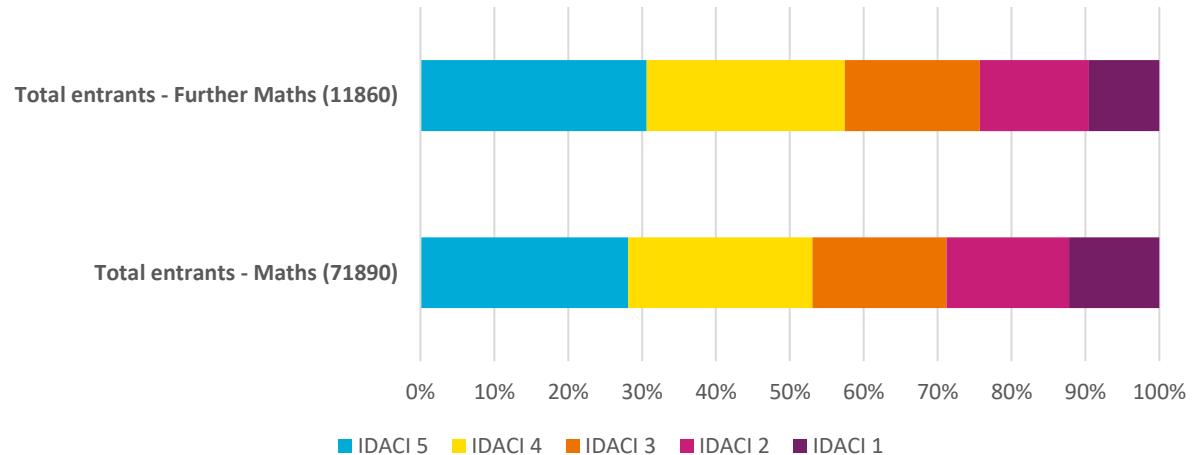
**Solution:** Hybrid sustained contact programme of academic support focussed on most challenging curriculum areas

# A Level attainment gaps

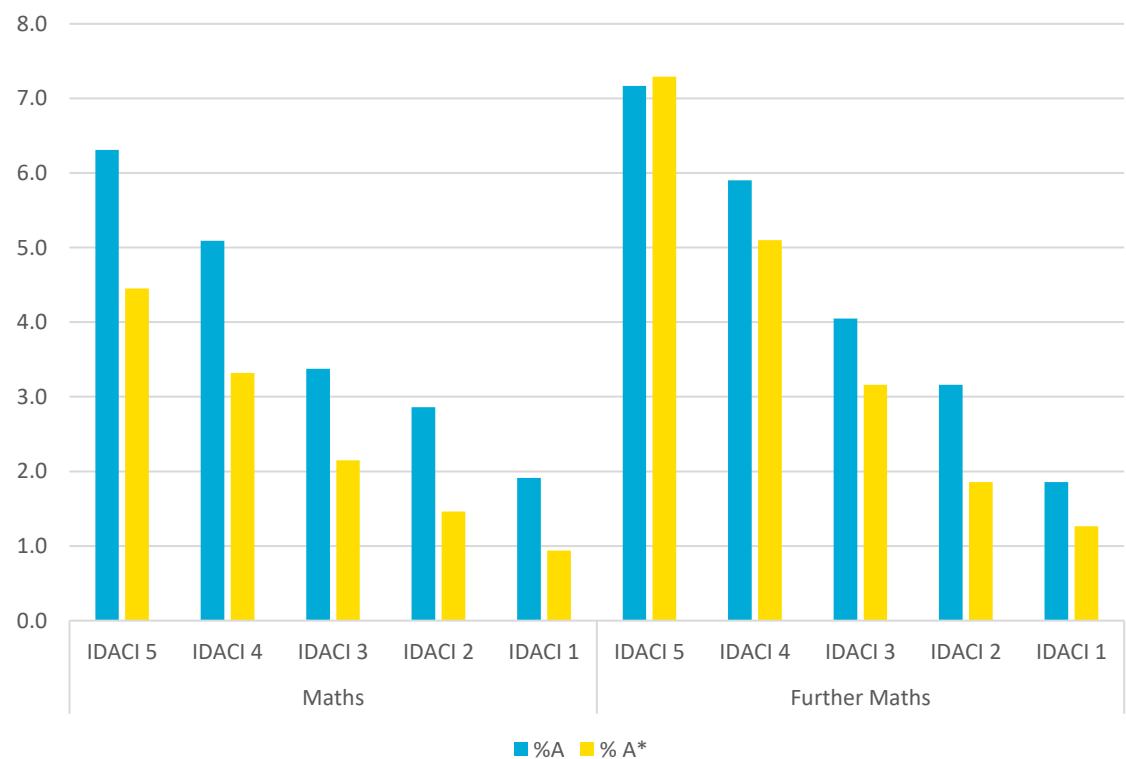
## Maths and Further Maths



Proportion of exam entrants from different IDACI quintiles



% Students Achieving A and A\* in 2018/2019 A levels



# Programme Selection Criteria

## Academic Requirements

- ✓ You have achieved eight GCSEs with a minimum of six GCSEs graded at 7-9 (or A/A\* level), including Science and Mathematics
- ✓ You are capable of achieving an A grade in A-level Mathematics, even if you may not feel certain of this

## Eligibility Criteria

### Priority 1

- You have been in care
- You live independently (estranged)

### Other:

- You are a young carer
- Your family income is below £50,000
- You are eligible for FSM/PP
- Parents/guardians did not attend university
- Live in IMD Q1 or POLAR Q1/2
- School has high %FSM students
- School has below average attainment

# Participant Demographics

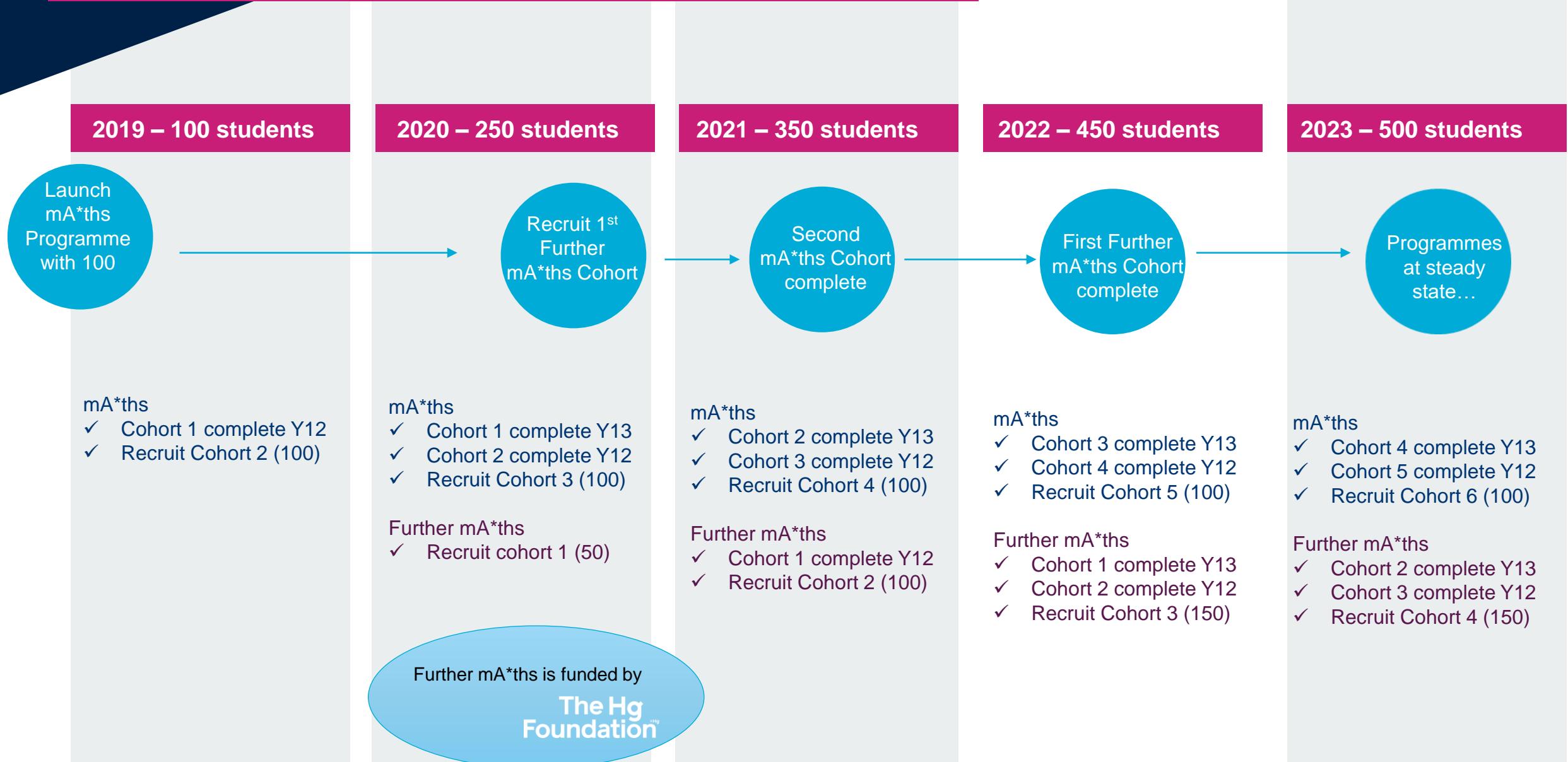
Further Maths 2023 – Y12 entry

Gender		
	Applicants	Participants
Female	153	50
Male	314	103
No response	4	1
Female	32%	32%
Male	67%	67%

Location	Applicants	Participants
East Midlands	19	7
East of England	60	18
London	228	73
North East	4	2
North West	36	13
Northern Ireland	0	0
Scotland	0	0
South East	45	11
South West	18	4
Wales	4	1
West Midlands	22	8
Yorkshire and the Humber	34	17
Inside London	49%	47%
Outside London	51%	53%
Inside London & SE	58%	55%
Outside London & SE	42%	45%

Met either IMD or POLAR4 target		
	Applicants	Participants
Yes	149	107
No	323	47
Target	32%	69%
Non-target	68%	31%

# PROGRAMME DEVELOPMENT – SCALING UP



## PROGRAMME STRUCTURE

Programme Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Activity	Blue	Purple	Purple	Yellow	Purple	Yellow	Purple	Purple	Grey	Grey	Purple	Purple	Yellow	Purple	Yellow	Purple	Yellow	Blue

### Masterclasses (in-person)

Saturdays (9-4pm)

Talks and workshops

### MOOCs

Online 7-8 weeks

edX

Self-paced

### Online Mentoring

2 hour online sessions in set weeks

Hosted on Integral (MEI).

## Programme Components

### MOOCs

Open to all on edX and can be accessed for no cost

Tailored around the A\* content of the A level and trickier topics

Videos, assessments, explanations, practice questions, assessments



### ONLINE MENTORING

Hosted through MEI Integral platform

10 students per group

1-2 hour sessions (3 options in a week)

Mentors provided with additional questions



### MASTERCLASSES

Opening and closing lectures

Workshops working in mentor groups

Led by MEI staff plus Imperial Maths staff

Content primarily maths – some IAG



*I further developed skills I needed more practice on.*

*Very useful and also helpful to see other students questions and learn from their questions too.*

*It was fun and educational*

# What we have learnt

## Challenges

- A Level teaching structure
- Variation in exam board content
- Students having limited time/maintaining engagement
- Mentor recruitment in line with programme growth and ensuring quality of mentors
- Increasing national reach



*It was easy to forget which weeks were mentoring weeks and sometimes referring to questions can also be challenging (feedback on online mentoring)*

*I didn't have time to finish it (feedback on MOOC)*

*Travelling to the program; I don't live in London so figuring out the path to the venue was a bit annoying at times.*

*There was quite a lot of work to do in a week and sometimes I felt like I was falling behind which was quite stressful*

*Parts of the virtual meet were the least enjoyable as I found it difficult to understand some of the things being explained.*

*The modules were a bit too long sometimes, especially during exams where there was less available time for me*

*A lot of it I had not yet done at school so I struggled*

## EVALUATION - Qualitative



**Aim to measure whether are supporting attainment raising through:**

- Building resilience
- Developing critical thinking
- Supporting metacognition



**Students complete two surveys each year**



**Currently undertaking in depth mixed methods evaluation with the CfEY**

This includes Focus Groups, Interviews, Theory of Change Review and review of survey data and questions.

## EVALUATION - Quantitative



### University Progression

UCAS Strobe data

HEAT data

Possible future options to look at progression  
data linked to attainment data



### A level grades

Completing grade comparator analysis using  
National Pupil Database data (analysis being  
undertaken by FFT)

Future options to do this using HEAT

## EVALUATION

### mA\*ths Online Programme

Up to 2021/22 academic year (Cohorts 1 and 2)

80% of participants applied to at least one Russell Group university in 2021, very significantly higher than 55% in a comparison group

69% of participants were accepted at a Russell Group university in 2021, significantly higher than 58% in a comparison group

### Further mA\*ths Online Programme

#### Cohort 1

72% of participants showed promotor scores when asked if they would recommend the programme to a friend

94% Agreed that the programme was relevant to topics they studied at school or college

Before 77% : After 94%  
Those who agreed that people similar to me go to Imperial

97% Agreed that the programme helped them to better understand topics they had studied at school



**Thank you to**  
Treacy Hanley and Hannah Sheehy  
Phil Ramsden  
MEI  
The Hg Foundation

# | mA\*ths and Further mA\*ths Online Programmes



Copy link



0:00 / 3:15



YouTube

