

**carmel**  
college

Inspiring minds.  
Shaping futures.

Gifted and Talented

# MATHEMATICAL SCIENCES

PROGRAMME 2016-17



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GIFTED AND TALENTED PROGRAMME 2016-17

Carmel's **GIFTED AND TALENTED PROGRAMME** provides a structured programme of activities, events and support to our Gifted and Talented students. It offers the best possible preparation for application to **Oxbridge, Russell Group and other prestigious institutions**, as well as onto Medicine, Dentistry and Veterinary Science degree courses. It also provides support for our talented students in specialist fields such as Art, Music, Physical Education and Drama/Theatre Studies.

As a Gifted and Talented student studying Mathematics based courses at Carmel, you will be supported, encouraged and challenged to achieve your potential in your studies. Our highly-qualified and committed **Mathematics, Computer Science and Economics tutors** will help you to develop the high order skills necessary for success at degree level on courses such as Mathematics, Computer Science, Engineering and Sciences.

## Success Stories

**Jack Huang** (Cowley) is studying Mathematics at **Oxford University** after gaining an A\* in both Mathematics and Further Mathematics alongside his A's in A Level Physics and Economics. Jack was identified as a high achiever in his first year, completing the STEP correspondence program whilst going along to high achiever maths lessons on a weekly basis.

**Mary O'Neill** (St Augustine's) is studying Mathematics at **King's College London** after gaining an A\* in Mathematics and an A in AS Further Mathematics alongside her B in A Level English Literature and an A\* in Graphic Design. Mary didn't discover her love of maths until midway through her first year; she chose to pick up an AS in Further during her second year and attended the high achiever classes weekly.

**Connor Duffy** (St Cuthbert's) is studying Mathematics at **Nottingham University** after gaining an A\* in both A Level Maths and Further Maths alongside his A in A Level Physics and a B in A Level Chemistry. Connor joined Carmel whilst still studying his GCSEs at his secondary school. He came to the college once a week to sit his AS Maths early, managing to complete the A Level a year before his peers.

**Penney Rigby** (De La Salle) is studying Mathematics at **Durham University** after gaining an A\* in A Level Maths and A in Further Maths alongside her B in A Level Physics and a B in AS Chemistry. Penney decided to switch to a maths degree after enjoying her time representing Carmel College in mathematical competitions.

**Kenny Hughes** (St Gregory's) is studying Mathematics at **Manchester University** after gaining an A\* in both A Level Maths and Further Maths alongside his A\* in A Level Chemistry and a C in AS Biology.

## What will I be offered through the College Gifted and Talented Programme?

At the beginning of your first year in college you will be enrolled onto **Carmel's Gifted and Talented Programme**.

You will be offered the chance to attend the **Haydock Oxbridge Conference** and to visit Oxford and Cambridge at the end of the first year. There will also be the opportunity to apply for summer projects, such as the Nuffield Research Placement Scheme, which provide incomparable opportunities to appreciate the applications of Mathematics and Computer Science in modern scientific research, and which will also provide you with experiences to discuss during university interviews.

You will also have the opportunity to complete the **Extended Project Qualification (EPQ)**, which will allow you to choose an area or aspect of Mathematics, Computer Science or Economics in which you have a particular interest. Some examples of projects students have attempted include the properties of the Rubik's cube, and the relationship between Mathematics and culture. You will then be encouraged to use your research skills to produce a 5000 word study. This qualification is highly-regarded by leading universities, as it demonstrates your enthusiasm for the subject and ability to work independently. Moreover, it is often a point of focus for discussion at admission interviews.

## What will the Mathematical Sciences Gifted and Talented Programme offer me?

As part of the Mathematical Sciences Gifted and Talented Programme, you will be supported by our **Mathematical Sciences Gifted and Talented Co-ordinator**, who, assisted by departmental staff, will offer you specialist help to ensure that you develop your interests in these subjects. You will receive advice as to which degree course will best suit your future career ambitions and you will be supported at all stages during the UCAS application process.

This specialist support begins during your first term at Carmel; some students are enrolled onto the programme as a result of their GCSE points profile, others as a result of their performance in the college's internal examinations in October and their commitment within lessons.

During your first year, **there will be a number of opportunities for you to develop your subject experiences across the Mathematics, Computer Science and Economics departments**. These include enrichment opportunities, such as: a course in code breaking; sessions on solving Mathematical problems; participation in regional and national Mathematics competitions, such as the UKMT Senior Mathematics Challenge and the Liverpool Mathematics Society Maths Quiz; additional programming activities using a variety of programming languages; and participation in the Target 2.0 Competition for Economics.

At the beginning of the second term, as you begin to consider which Mathematics related courses you may pursue at degree level, you will have the chance to attend a variety of events and lectures, such as the Maths Inspiration Lectures and a 10 week Economics lecture course organised by the University of Manchester, to gain an insight into studying those subjects at degree level. There will also be talks held by ex-Carmel students studying Mathematics related courses at prestigious institutions.

The second year will begin with a focus on UCAS applications. You will be given specialist support at admissions workshops, which will cover all aspects of the admissions process, from choosing the right degree course to writing an effective Personal Statement.

The focus will then shift to preparing for interviews and admissions tests, such as the MAT used by Oxford and Imperial College London, STEP which is favoured by Cambridge and Warwick, and the AEA. This support will take the form of weekly sessions delivered in college, and you will also have the opportunity to attend external sessions organised by the Further Maths Support Programme in Liverpool.

Finally, with your external examinations approaching, you will be offered Stretch and Challenge tutorials in all your subjects which will provide you with the opportunity to hone the skills needed to achieve the highest grades in your examinations.

2016's Gifted and Talented students visit the Oxbridge colleges



Pop Maths Quiz 2016



Senior Maths Challenge 2016



Problem Solving



## Our students say..



"What I have enjoyed the most about Carmel is how the students are helped to achieve what they are capable of but they're also pushed to achieve beyond their own expectations. The teachers also offer a weekly tutorial session which I find very beneficial and on top of that

students meet with their subject tutors to talk about their strengths, weaknesses and progress. As Maths develops your logical thinking and problem solving skills, it is very useful as it complements many other subjects, particularly the Sciences. I hope to study Mathematics at Trinity Hall, Cambridge."

**Jack Huang** (Cowley)

Studied Further Maths, Maths, Physics, Economics  
Now at Oxford University studying Mathematics



"During my time at Carmel College, I have thoroughly enjoyed my Maths and Further Maths lessons. This has been enhanced through attending STEP/AEA practice sessions during Enrichment time and 'Advanced Problem Solving' evenings at the University of Liverpool. The challenging

nature of both of these sessions, along with continuous support from my teachers within the department during the university application process, has helped me build my confidence and ability across all of my mathematical studies and prepare me for university. After Carmel, I plan to go to King's College London to study Mathematics."

**Mary O'Neill** (St Augustine's)

Studied Maths, Further Maths, English Literature, Graphic Design  
Now at King's College London studying Mathematics

## Mathematical Sciences Gifted and Talented Calendar 2016-17

		GIFTED AND TALENTED PROGRAMME GENERAL	MATHEMATICAL SCIENCES GIFTED AND TALENTED PROGRAMME
2016	SEPTEMBER	Gifted and Talented Programme meeting; Gifted and Talented Societies begin	Liverpool University Mathematics Club starts
	OCTOBER	Internal Exams – Gifted and Talented students not already on the programme are identified and enrolled	Mathematics problem solving competition begins; Computer Science students encouraged to start Project Euler; Economics lectures at Manchester University
	NOVEMBER	Apply for Cambridge and Oxford Shadowing Scheme	UKMT Senior Maths Challenge; UKMT Senior Team Maths Challenge
	DECEMBER		Year 12 Mathematical Problem Solving at Liverpool University; British Maths Olympiad and Senior Kangaroo
	JANUARY	Application for Sutton Trust and summer schools; Identification of Gifted and Talented students after internal exams	Economics Target 2.0 Campaign
	FEBRUARY	Should you be thinking about Oxbridge? - talk	Liverpool Maths Society Pop Maths Quiz; Liverpool Maths Society Open Challenge
	MARCH	Mansfield Study days at Oxford; Haydock Oxbridge conference	Maths Inspirations Lecture
	JUNE	Careers Evening talks	UCAS workshops and talks by ex-Carmel students
	JULY	Oxbridge Open days; Summer schools start	Trips arranged to 'Mathsworks' Conference, 'EPQ' Conference and 'Maths @ Manchester'
2017	SEPTEMBER	UCAS preparation Early Applicants; Aim Higher evening; Oxbridge application training	Mathematics Admissions Tests preparation session begins
	OCTOBER	Early Application deadline; Internal Mock Interview Evening	MAT / STEP / AEA preparation sessions at Liverpool University
	NOVEMBER	Oxbridge interview training	Mathematics, Computer Science and Economics interview question practice
	JANUARY onwards		STEP & AEA preparation; opportunity for independent study; Stretch and Challenge material covered in all subjects
	AUGUST	Support on results day	Departmental support on results day

### More Information

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