Without mathematics, there’s nothing you can do. EVERYTHING AROUND YOU IS NUMBERS.

SHAKUNTALA DÉVI
Why choose Mathematics at Carmel?

Having successfully completed your GCSE course you are now in a position to tackle Maths at a more advanced level. This is a highly regarded and enjoyable A Level which will impress any future employer. Here at Carmel we are very proud of our Maths students’ outstanding record of achievement over many years. We can guarantee that every student will receive first class tuition using a variety of teaching strategies in a modern spacious environment. This, coupled with our excellent support programme, makes Carmel, in our opinion, the only place to study Maths.

What will I study?

A Level Mathematics builds from GCSE level Mathematics (number, algebra, graphs and trigonometry) and introduces calculus and its applications. It emphasises how mathematical ideas are interconnected, teaches students how to make sense of data, to understand the physical world and to solve problems in a variety of contexts, including social sciences and business. It prepares students for further study and employment in a wide range of disciplines involving the use of mathematics.

How is the course examined?

A Level Mathematics will be assessed by three exams at the end of the second year of study. These exams will focus on pure mathematics, statistics and mechanics. Carmel’s Mathematics department offers lots of support to ensure that all our students feel well prepared for their examinations.

Where does this course lead?

Maths can lead to a myriad of courses in both further and higher education. Obvious careers include accountancy, banking, engineering, medicine, computing and scientific statistical research.

However, there are many other diverse areas where mathematical skills are recognised as invaluable and essential. If you are planning to study a mathematics based course at university, we recommend that you should also choose A Level Further Maths.

Carmel College has given me the confidence to progress further in all my subjects, particularly Mathematics.

I would definitely recommend Maths to future Carmel students. Although time and patience is needed, I believe that this hard work pays off when you exceed your own expectations.

I find Maths lessons very enjoyable! I love how my teacher uses different techniques to explain complex maths in an interesting way and, as a result, I am more inquisitive and interested in mathematical ideas and solutions.

Extra resources online, provided to us by the Mathematics department, help to challenge students and give us plenty of opportunity to improve. Out of lessons, tutorial sessions are held frequently in the week where teachers are happy to help students if they are struggling with any homework; the staff always give us maximum support.

I have not yet decided on my future career path, but I know that Mathematics will be extremely beneficial for many different areas of work.

Tess Hankinson
St Gregory’s
Studying: Mathematics, Drama & Theatre, English Lang & Lit

A Level Mathematics Results

<table>
<thead>
<tr>
<th>Year</th>
<th>A*</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>U</th>
<th>Total Entries</th>
<th>Total Passes</th>
<th>Pass Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>9%</td>
<td>20%</td>
<td>15%</td>
<td>25%</td>
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<td>1%</td>
<td>178</td>
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<td>2020</td>
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<td>2021</td>
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<td>167</td>
<td>167</td>
<td>100%</td>
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</table>
What is Further Maths?
If you get a grade 7 or above at GCSE you should seriously consider studying Further Mathematics. Mathematics is such a vast subject it is impossible to cover it all in one A Level. A Level Further Mathematics builds on some of the concepts met in A Level Maths and is able to extend these into other areas. It attracts students who thoroughly enjoy the subject and are keen to extend their understanding and knowledge. You can choose Further Mathematics as one of your three main A Level choices alongside Mathematics. Alternatively, if you enjoy Mathematics but don't want to limit your other three A Level choices, there is a unique opportunity to take Further Mathematics as an additional AS qualification. Students who study both actually perform better due to their increased understanding of Mathematics in general.

Why study Further Maths?
Further Mathematics is designed for students with an enthusiasm for Mathematics, many of whom will go on to degrees in Mathematics, Engineering, the Sciences and Economics. Students who study this course go off to University and find the content covered and skills acquired of great benefit. If you are considering a Mathematics or Engineering based degree you may find that some Universities will actually require that you have studied Further Mathematics. It is also good for those students who are considering applying for a competitive degree course, for example Oxbridge entry.

What will I study?
As well as building on Algebra and Calculus introduced in A Level Mathematics, the A Level Further Mathematics Core content introduces Complex Numbers and Matrices, fundamental mathematical ideas with wide applications in Mathematics, Engineering, Physical Sciences and Computing.

How is the course examined?
A Level Further Mathematics will be assessed by three exams at the end of the second year of study. These exams will focus on Core Mathematics and a variety of applied topics.

A Level Further Mathematics Results

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<tr>
<th>Year</th>
<th>A*</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>U</th>
<th>Total Entries</th>
<th>Total Passes</th>
<th>Pass Rate</th>
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<tbody>
<tr>
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<td>28%</td>
<td>22%</td>
<td>13%</td>
<td>25%</td>
<td>9%</td>
<td>3%</td>
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<td>32</td>
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<tr>
<td>2020</td>
<td>26%</td>
<td>29%</td>
<td>32%</td>
<td>9%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>34</td>
<td>34</td>
<td>100%</td>
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<tr>
<td>2021</td>
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<td>30%</td>
<td>19%</td>
<td>15%</td>
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<td>0%</td>
<td>4%</td>
<td>27</td>
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</tbody>
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Studying both Maths and Further Maths has allowed me to develop my interest in Maths and become a more independent, logical student.
I would definitely recommend taking both A Levels if you have an interest in the subject as I have progressed a massive amount over the past two years, aided by the support of Carmel's Maths teachers.

The Maths department at Carmel offers tutorials and one-to-one support and there are lots of resources to help you progress in your subjects.
We had the opportunity to take part in the UKMT, a national yearly maths challenge, where you can apply your maths skills to problem solving.
I have particularly enjoyed the added complexity of Further Maths, especially the mechanics modules which provide applications to real life. By taking both Maths and Further Maths, I feel much more prepared to move onto university where I hope to study Maths and Actuarial Science.

Alex Murray
Wade Deacon
Studying: Maths, Further Maths, Economics
What is Statistics?

Statistics is not only an application of Mathematics, but is a growing field of study in its own right. More and more areas of our lives are influenced by Statistics and knowing just how they fit into other studies is an advantage.

Statistics is used in everything from deciding how much orange juice Tesco will buy next year to whether or not a new drug will indeed cure a serious illness. It is said that no-one can now expect to get through their working life without some contact with computers; the same is rapidly becoming true of Statistics.

What will I study?

A Level Statistics builds upon the Statistics and Probability components of GCSE Mathematics and teaches students how to make sense of data trends and to solve statistical problems in a variety of contexts, such as Psychology, Biology, Geography, Business and the Social Sciences. It prepares students for further study and employment in a wide range of disciplines which use statistical analysis and reasoning with data. The topics include data analysis, probability, data distributions, hypothesis testing and regression analysis.

How will I be assessed?

A Level Statistics will be assessed by three (two hour) exams, which will take place at the end of the second year of study.

What will Statistics prepare me for?

Statistics A Level is a reputable subject and a good grade will help with any Higher Education application. It will also be a major benefit to any qualification involving Psychology, Geography and Biology. Statistics is now used so widely that many employers would see a qualification in Statistics as a distinct advantage. Many students have enjoyed Statistics so much that they go on to study it further at university. Statistics would also be the perfect choice if you are planning to follow a career path into finance or business.

A Level Statistics Results

<table>
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<tr>
<th>Year</th>
<th>A*</th>
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<th>D</th>
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</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>0%</td>
<td>3%</td>
<td>9%</td>
<td>32%</td>
<td>36%</td>
<td>11%</td>
<td>9%</td>
<td>56</td>
<td>51</td>
<td>91%</td>
</tr>
<tr>
<td>2020</td>
<td>4%</td>
<td>13%</td>
<td>18%</td>
<td>45%</td>
<td>12%</td>
<td>9%</td>
<td>0%</td>
<td>76</td>
<td>76</td>
<td>100%</td>
</tr>
<tr>
<td>2021</td>
<td>5%</td>
<td>11%</td>
<td>16%</td>
<td>30%</td>
<td>22%</td>
<td>8%</td>
<td>8%</td>
<td>79</td>
<td>73</td>
<td>92%</td>
</tr>
</tbody>
</table>

What I like about Carmel is that they offer a large amount of support, not only in lessons, but with University applications, apprenticeships, work placements and more!

Statistics is my favourite subject. The teaching styles are interesting and make it easy to understand the applications of the subject itself. Studying Statistics has not only greatly increased my understanding of how to apply my knowledge, but it has had a big influence on my university offers to study Psychology. This is because Statistics forms the framework of basic psychological research methods. One of my UCAS offers has lowered drastically because I study A Level Statistics.

I would highly recommend the course to anyone wishing to go on to do Psychology, or other analytical based subjects, as the teaching is incredible and students get a lot of support. The highlight of my time at Carmel has been the teachers here, not only do they teach well, but they do it with passion and make every lesson enjoyable!

Joshua Aldridge
Kirkby High School
Studying: Statistics, Psychology, History
WHERE ARE THEY NOW?

Here are some examples of where our Maths students have progressed to...

Bartosz Jablonski
Chemistry – A*
Maths - A
Physics – A*
PHYSICS
THE UNIVERSITY OF MANCHESTER

Grace Wright
Geography - A
Maths - A
Philosophy, Ethics & Religion - A
PHILOSOPHY & THEOLOGY
ORIEL COLLEGE, OXFORD

Hamdan Baker
Maths - A*, Biology - A
Chemistry - A
DENTISTRY
QUEEN MARY UNIVERSITY OF LONDON

Dona Josh
Biology – A*, Chemistry – A*
EPQ – A*
Maths - A
BIOCHEMISTRY
SOMERVILLE COLLEGE, OXFORD

Daniel Crane
Physics - A*, Maths – A*
Further Maths – A*
Chemistry – A
NATURAL SCIENCE
DURHAM UNIVERSITY

Jacob Burke
Chemistry – A*, Physics – A*
Maths – A*
Further Maths A*
ENGINEERING (MENG)
UNIVERSITY OF LIVERPOOL

James Mooney
Physical Education – A*
Chemistry – A, Mathematics – A
SPORT & EXERCISE SCIENCE
LIVERPOOL JOHN MOORES UNIVERSITY
MATHS ENRICHMENT

Maths Competitions
Each year students enter the UKMT Senior Maths Challenge. In 2019, 46 students gained certificates with 3 achieving the prestigious Gold Award.

We also enter teams for the UKMT Team Maths Challenge as well as the Liverpool Maths Society Pop Maths Quiz, where students compete against teams from across the region. These are events thoroughly enjoyed by the students and Carmel has come away as victors in a few of them. In previous years our students have won the Pop Maths Quiz. They also claimed first prize at the Liverpool regional UKMT Team Challenge, before travelling to London to compete in the finals.

Educational Talks
The department offers educational talks covering a wide range of mathematical careers. Recent talks have included information on apprenticeships with Siemens and Jaguar Landrover, accountancy and finance at KPMG and engineering at Atkins Global.

Problem Solving Workshops
High achieving students attend problem solving workshops at the University of Liverpool organised by the Further Mathematics Support Programme.

Extension Paper Support
Students who want to study mathematics related courses at prestigious institutions such as Cambridge, Oxford, Warwick and Imperial College London will have to complete admission tests such as the MAT, STEP or the AEA. Carmel is able to provide support and guidance to students preparing for all these examinations as well as assistance in preparing them for their interviews.

Maths Workshop with Oxford Professor
In 2019 Professor Balázs Szendrői from St Peter’s College, Oxford, completed a workshop with some of our talented Maths students. It gave them the opportunity to think differently about geometrical problems and to investigate the relationship between reflections, rotations and translations on the x-y plane. Professor Szendrői also held a question and answer session for those students interested in applying to Oxford University. This was a fantastic opportunity for the students who benefitted greatly from the sessions.
Trips

The Maths department has organised trips to Barcelona, visiting a number of venues including Gaudi's Sagrada Familia and Parc Guell, the Gothic Quarter, Camp Nou and Port Aventura.

Previously there have been trips to China the East coast of America and the West coast. The most recent trip was to the East coast of America and Canada, visiting New York, Finger Lake, Niagara Falls, Toronto and Boston. All the trips have been a huge success and enjoyed by students and staff alike.
What is the Maths department like?
The Maths department is located in its own teaching block which houses a suite of 8 modern, bright and spacious classrooms. Each classroom has a multi-media projector and interactive whiteboard which is linked to the college network and internet. In addition, there is also a fully resourced student work base.

What support will I receive?
The support systems within the Maths department are almost legendary! Each student's needs are continually assessed and monitored throughout the year. Formal tutorials are then in place to address the specific problems students are having.

At exams time the department also runs a much valued comprehensive series of revision tutorials to supplement a student's own revision programme. No Maths student at Carmel is ever struggling for support at this critical time in the academic year.

How successful are Carmel's Maths students?
At Carmel we are extremely proud of the outstanding results Mathematics students have obtained over a period of many years and for a substantial number this has been high grades.

For others however, a pass grade is a real achievement and we are just as proud of this. We aim to bring out the very best in all our students, whatever their potential or their academic ability.

Why are our Maths results so outstanding?

• An excellent course structure
• Individual targets set for each student, which are monitored and checked on regular occasions throughout the course
• Rigorous homework policy
• High expectations of all of our students
• Regular testing and monitoring of progress
• Intensive tutorial programme in periods leading up to external examinations
• Excellent relationships between students and staff
• Very approachable and experienced staff

What are the entry requirements for these courses?

Maths
GCSE grade 6 in Maths

Further Maths
GCSE grade 7 in Maths

Statistics
GCSE grade 5 in Maths
GCSE grade 5 in English Language