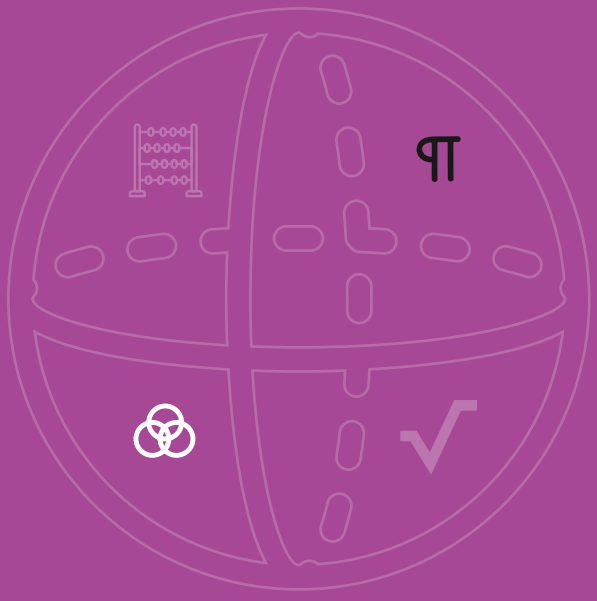
carmel college

Inspiring minds.
Shaping futures.

MATHEMATICS

COURSE GUIDE 2018

MATHEMATICS
FURTHER MATHEMATICS
STATISTICS
CORE MATHS



Mathematics is the queen of the sciences.

CARL FRIEDRICH GAUSS

MATHEMATICS

Linear A Level
Exam Board: PEARSON

OUR STUDENTS SAY...

Carmel is a great place to study, the staff and students are amazing and the college has excellent support networks to ensure that your experience at college is the best possible.

The feeling I get when I finally solve a problem I deemed impossible minutes before is why I love to study maths. I've learnt so many new skills whilst during my studies that can be applied to many subjects and life. Some aspects of the subject can be very challenging but that's why the tutors are so amazing. If you don't understand a topic in class or you're finding a question on your homework difficult, you can visit a tutorial or see any tutors during or after college. The Maths Department also has amazing trips each year, ranging from Spain to even America. I've really enjoyed studying Maths at Carmel that I am now choosing to study the subject at university.

E'Lsie Ocaka The Prescot School
Studying: Maths, Biology, Sociology

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. Even students who may not have enjoyed GCSE Maths at school, find A Level Maths a much more stimulating and rewarding course.

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.

A Level Mathematics results

								Total	Total	Pass
Year	A*	A	B	C	D	E	U	Entries	Passes	Rate
2014	14.4%	25.9%	24.5%	19%	12.5%	3.2%	0.5%	216	215	99.5%
2015	21%	23%	21%	17%	11%	6%	1%	251	248	99%
2016	15%	17%	21%	23%	18%	6%	0.5%	213	212	99.5%
2017	16%	20%	22%	21%	13%	6%	3%	249	242	97%

FURTHER MATHEMATICS

Linear A Level
Exam Board: AQA

OUR STUDENTS SAY...

Carmel has a friendly atmosphere and all the teachers are passionate about their subjects.

The Maths Department offers plenty of extra support sessions and the Maths teachers are always willing to help. I find Further Maths a challenging yet interesting subject as it has provided me with further mathematical knowledge as well as the mathematical applications in real life. Through Further Maths, I have been given many opportunities to take part in maths competitions such as the UKMT senior individual and team challenges as well as the Liverpool Pop Maths quiz.

Further Maths is a subject that is well appreciated by universities and if you are thinking of studying a STEM related degree, then I would recommend you consider taking this subject.

Ann Guo Rainford High
Studying: Maths, Further Maths, Statistics, Physics

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 in to other areas. It attracts students who thoroughly enjoy the subject and are keen to extend their understanding and knowledge. Contrary to a common misconception, the majority of the course is no more difficult than A Level Mathematics. Students who study both actually perform better due to their increased understanding of Mathematics in general.

Why study Further Maths?

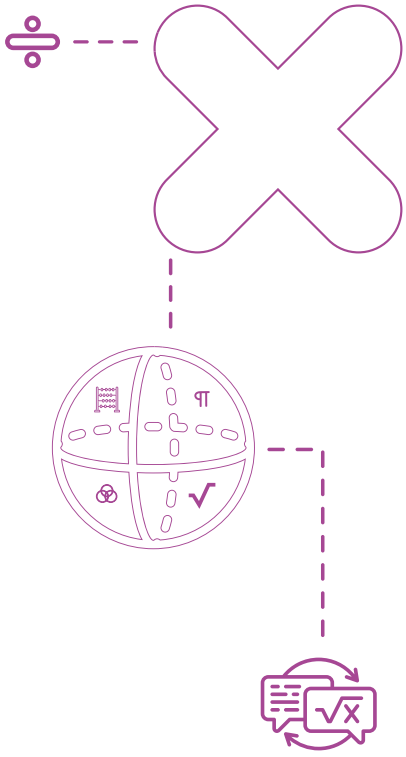
Further Mathematics is designed for students with an enthusiasm for Mathematics, many of whom will go on to degrees in Mathematics, Engineering, the Sciences and Economics. Students who study this course go off to University and find the content covered and skills acquired of great benefit. If you are 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

								Total	Total	Pass
Year	A*	A	B	C	D	E	U	Entries	Passes	Rate
2014	12.5%	50%	21.9%	6.3%	3.1%	3.1%	3.1%	32	31	96.9%
2015	22%	28%	25%	13%	7%	3%	2%	60	59	98%
2016	21%	23%	23%	13%	15%	5%	0%	39	39	100%
2017	16%	26%	35%	9%	7%	7%	0%	43	43	100%

STATISTICS

Linear A Level
Exam Board: PEARSON

OUR STUDENTS SAY...

I'm glad I chose to come to Carmel, the Maths Department is so friendly and the tutors are always willing to help

You can tell that they want all their students to leave college with fantastic results. Statistics is very different to the other Maths subjects; you can see how your work could be used in the real world to solve real problems.After Carmel I want to get a degree and then go into data science to work on interesting statistics problems every day.

Last year I went on the America/Canada trip with the Maths Department which was a fantastic experience and I would definitely recommend it. I made lots of new friends and had a great time too! Overall I am glad that I decided to study A Level Statistics as it is a completely different branch of Mathematics.

George Asson Rainford High
Studying: Statistics, Maths, Further Maths

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 must be 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 two exams, which will take place at the end of the second year of study.

What will Statistics prepare me for?

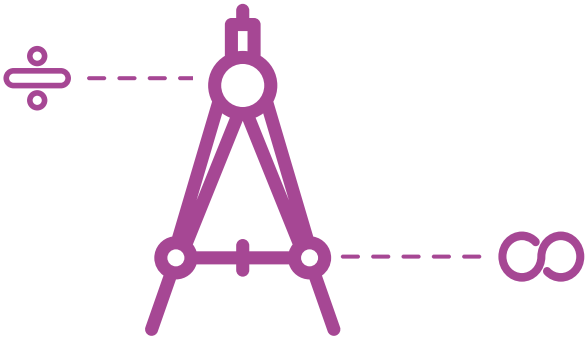
Statistics A Level is a reputable subject and a good grade will help with any Higher Education application. It will also be a major benefit to any qualification involving Psychology, Geography and Biology. Statistics is now used so widely that many employers would see some qualification in Statistics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

A Level Statistics results

								Total	Total	Pass
Year	A*	A	B	C	D	E	U	Entries	Passes	Rate
2014	0%	9.7%	41.9%	19.4%	12.9%	16.1%	0%	31	31	100%
2015	3%	13%	19%	22%	22%	22%	0%	32	32	100%
2016	0%	6%	20%	26%	22%	20%	6%	50	47	94%
2017	5%	14%	27%	38%	11%	3%	3%	37	36	97%

CORE MATHEMATICS

Level 3 AS Level
Exam Board: AQA



OUR STUDENTS SAY...

I like studying Core Maths at Carmel because the department is really supportive, I know that if I need help with my work I can always go and see my teacher.

The Core Maths course is very useful and helps me with my BTEC Business because we cover similar topics, which helps with my exams. I would recommend this course because you develop skills for everyday life and it is a practical course that you will be able to use in the future.

I like the fact that at Carmel there is a community feel which is developed during lessons in the first term. After Carmel, I hope to enrol on a Degree Apprenticeship in Business Management with a leading company.

Chloe Twist Archbishop Blanch
Studying: Core Maths, BTEC Business, ICT, French

What is Core Maths?

Core Maths is a course for those with a GCSE Mathematics grade 4 or above who want to keep up their valuable maths skills but who are not planning on taking A Level Mathematics. At the end of the course, you will have achieved a Level 3 qualification, similar to an AS.

The course not only supports your work in other subjects involving maths content at A Level, but is also designed to deepen and extend your mathematics and be better prepared for higher education and employment.

What will I study?

Core Maths will help you to understand and apply clear, mathematical reasoning to real-life problems, analyse and interpret data in various contexts and confidently deal with everyday financial maths.

How is it assessed?

Core Maths is assessed by final examination at the end of the course. The qualification merits UCAS points equivalent to an AS Level.

What will it prepare me for?

Core Maths has been designed to maintain and develop real-life skills.

It can be applied on a day-to-day basis in work, study or life. It will also help with other A Level subjects, in particular with Science, Geography, Business Studies, Psychology and Economics.

The skills developed in the study of Mathematics are increasingly important in the workplace and in higher education; studying Core Maths will help you keep up these essential skills. On average, students who study Maths after GCSE improve their career choices and increase their earning potential.

WINNERS!

Maths Competitions

Each year students enter the UKHT Senior Maths Challenge. This year we had our best ever results, with 76 students getting certificates, 8 gold awards, 5 qualified for the prestigious Kangaroo paper whilst one was entered for the British Mathematical Olympiad paper.

Teams are also entered for the UKMT Team Maths Challenge and the Liverpool Maths Society Pop Maths Quiz, where students compete against teams from across the region.

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.

Weekly Puzzle Competition

The department also runs a weekly puzzle competition where students submit entries to three weekly problems and have the opportunity to win £50 of Liverpool One vouchers.

Educational Talks

The department offers educational talks covering a wide range of mathematical careers. Recent talks have included information on apprenticeships with Siemans, accountancy and finance at KPMG and 'Statistics in the real world' from Nottingham University.

Mathematical Treasure Hunt

In their first year of studying Mathematics, some students will take part in the Christmas Treasure Hunt. Working in teams, they get the opportunity to showcase both their individual and collective brilliance.

Mission Impossible Activity

During their second year, students will band together and use their mathematical flair to take down a secret society!

Problem Solving Workshops

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

TRIPS

Over the last 8 years, the Maths department has organised an annual trip to Barcelona, visiting a number of venues including Gaudi's Sagrada Familia and Parc Guell, the Gothic Quarter, Camp Nou and Port Aventura.

We have also organised trips to China in 2012, the East coast of America in 2013 and the West coast in 2014. 2016's 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.

Frequently Asked Questions

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
- Extensive support systems

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

Core Maths
GCSE grade 4 in Maths

Meet the Tutors

Head of Maths
Katherine Maher

Assistant Heads of Maths
Joshua Robinson (Further Maths)
Phil Kearsley (Statistics)
Laura Ashurst (Core Maths)
Paul Morrison (GCSE Maths)

Maths Tutors
Peter Olsen
Nichola Mercer
Matthew Pennington
Sarah Williams
Jonathan Lavelle
Daniel McEntee
Daniel Carr
Sarah Murphy
Steven Deakin

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More Information

You can get a detailed course specification from the exam board websites:
www.qualifications.pearson.com / www.aqa.org.uk