Mathematics

Overview

The mathematics department is a forward thinking and dynamic department that puts pupil achievement at the heart of all that it does. In 2015 the department achieved an excellent set of GCSE results with 77% of students achieving a grade A*-C, 75% achieving 3 Levels of Progress and 31% achieving 4 Levels of Progress.

We understand the importance of making mathematics interesting, enjoyable and relatable to students. All staff strive to relate content to the real world as well as creating cross-curricular links whenever possible.

KS3 curriculum

At King Charles I School the focus within KS3 is on developing students' mathematical skills and abilities by covering topics in algebra, number, data, shape, space and measure. During lessons students focus on using and applying mathematical skills and developing their problem solving abilities in preparation for GCSE mathematics.

The curriculum is taught through a 'mastery' scheme of work where the priority is for students to master all aspects of a topic before moving on. This approach will ensure that all learners have a solid foundation on which to build their skills so as to properly prepare them for the GCSE course.

Students' progress is assessed regularly with mini tests at the end of each topic and further half-termly examinations while they work towards a final end of year assessment.

KS4 curriculum

The GCSE course is currently taught over 2 years, but will be taught over 3 for the current Year 9. The course is split into 4 units: number, algebra, geometry and statistics, all of which play an important role in mathematics.

Pupils will have four hours of mathematics lessons a week and are expected to study independently outside of these lessons to ensure that they achieve the best possible grade.

The course will be internally assessed by examinations taking place at the end of each topic, half term and a summary examination at the end of the academic year. Each of these will help prepare the students for their final assessment sat the end of Year 11. Depending on pupils' ability they will either sit the foundation or higher tier examination.

Homework for the course is given weekly and will usually be an exercise from an independent learning booklet. Each booklet is tailored to the year group and ability of each pupil. On occasion we may set homework electronically on mymaths.co.uk or doddlelearn.co.uk. It is the pupils' responsibility to ensure that this is completed on a weekly basis and to the best of their ability.

KS5 curriculum

At A level students have the opportunity to study both mathematics and further mathematics. During these 2 years there are 6 modules to complete for each course, 3 for an AS qualification and a further 3 for the A-Level.

In Year 12, students must complete core 1 and core 2 mathematics for the AS qualification while, for the A-level qualification, Year 13 students must complete core 3 and core 4. The third unit in each year can be any one of the following: statistics 1, statistics 2, mechanics 1,

mechanics 2, decision 1 or decision 2, however it will usually be S1 in Year 12 and M1 in Year 13.

For further mathematics further pure 1 needs to be completed for the AS qualification and, in Year 13, for the A-level, course further pure 2. The second and third unit in each year can be any of the modules not completed in the mathematics A-Level and so will usually be D1 and D2 in Year 12 and M2 and S2 in Year 13.

External assessment and controlled assessment

KS4

Year 9 2015-2016 – Edexcel Linear 9 – 1 GCSE mathematics, assessed in the summer of 2018 and made up of 3 examination papers, two calculator and one non-calculator. Each paper is equally weighted, each lasts 1 hour 30 minutes and is marked out of 80.

Year 10 2015-2016 – Edexcel Linear 9 – 1 GCSE mathematics, assessed in the summer of 2017 and made up of 3 examination papers, two calculator and one non-calculator. Each paper is equally weighted, each lasts 1 hour 30 minutes and is marked out of 80.

Year 11 2015-2016 - Edexcel Linear GCSE mathematics, assessed in the summer of 2016 and made up of 2 examination papers, one calculator and one non-calculator. Each paper is equally weighted, each lasts 1 hour 45 minutes and is marked out of 100.

KS5

Year 12 and 13 2015-2016 – Edexcel A-Level mathematics and Edexcel A-Level further mathematics, assessed in the summer of Year 12 and Year 13 and each course is made up of 6 modules, 3 taken in each year. Each module is equally waited and is marked out of 75.

SMSC in the mathematics

Through various projects, mini investigations and activities built into lessons, SMSC (Spiritual, Moral, Social and Cultural) is being delivered in high quality lessons.

What we offer:

- A classroom environment which encourages problem solving, collaborative work and enjoyment of exploring real-life problems.

- Participation in extra-curricular activities such as the UK Schools Mathematics Challenges, Maths Enrichment Days, Mathematics Revision Sessions, and Maths Club for students who want to extend themselves and have fun in mathematics

Spiritual development in mathematics

We encourage pupils to see the awe and wonder that can be found within mathematics – from the symmetry of a snowflake or the number of seeds in a sunflower head to the design of galaxies and the coordinates of a newly discovered planet. Pupils are introduced to famous mathematicians, some of whom are also well-known as philosophers. There is a sense of wonder in the exactness of mathematics and students are able to gain a sense of personal achievement in solving problems.

Moral development in mathematics

We look at the use and interpretation of data, particularly the use of statistics and how people manipulate them to promote their own (biased) opinions. Pupils are encouraged to discuss the use and misuse of data in all issues, including those supporting moral arguments, and consider the use of questionnaires to conduct opinion surveys.

Social development in mathematics

Pupils are regularly asked to work in pairs or small groups during experimental or investigative work where they are able to develop both their problem solving and teamwork skills. They are given many opportunities to discuss their ideas and are encouraged to develop their mathematical reasoning through communication with others. Through the use of peer-assessment pupils are able to improve their use of language and better understand how to give constructive criticism.

Cultural development in mathematics

Students are able to explore the mathematics found and used in other cultures. They are introduced to symmetrical patterns, number systems and mathematical methods such as patterns found in Islamic art and Roman numerals. Students are introduced to the culturally and historically significant art of code-breaking and theorems devised by famous mathematicians.