



Maths Curriculum Key Stage 5

Intent:

To develop our students to become fluent in the fundamentals of Mathematics, reason mathematically and solve problems by applying mathematics.

Mathematics education at Christ the King College aims to provide students with a foundation for understanding the world, the ability to reason mathematically, an appreciation of the beauty and power of Mathematics and a sense of enjoyment and curiosity about the subject. Mathematics is essential to everyday life, critical to science, technology and engineering, and necessary for financial literacy and most forms of employment

Curriculum Outline Key Stage 5

Year 12 Mathematics

Pure Mathematics

- Algebraic expressions
- Quadratics
- Equations and inequalities
- Graphs and transformations
- Straight line graphs
- Circles
- Algebraic methods
- The binomial expansion
- Trigonometric ratios
- Trigonometric identities and equations
- Vectors
- Differentiation
- Integration
- Exponentials and logarithms

Statistics

- Data collection
- Measures of location and spread
- Representations of data
- Correlation
- Probability
- Statistical distributions
- Hypothesis testing

Mechanics

- Modelling in mechanics
- Constant acceleration
- Forces and motion
- Variable acceleration

Year 13

Pure Mathematics

- Algebraic methods
- Functions and graphs
- Sequences and series
- Binomial expansion
- Radians
- Trigonometric functions
- Trigonometry and modelling
- Parametric equations
- Differentiation
- Numerical methods
- Integration
- Vectors

Statistics

- Regression, correlation and hypothesis testing
- Conditional probability
- The normal distribution

Mechanics

- Moments
- Forces and friction
- Projectiles
- Applications of forces
- Further kinematics

Year 12 Further Mathematics

Core Pure Mathematics

- Complex numbers
- Argand diagrams
- Series
- Roots of polynomials
- Volumes of revolution
- Matrices
- Linear transformations
- Proof by induction
- Vectors

Further Statistics

- Discrete random variables
- Poisson distributions

- Hypothesis testing
- Chi-squared tests

Further Mechanics

- Momentum and impulse
- Work, energy and power
- Elastic collisions in one dimension

Year 13 Further Mathematics

Core Pure Mathematics

- Complex numbers
- Series
- Methods in calculus
- Volumes of revolution
- Polar coordinates
- Hyperbolic functions
- Methods in differential equations
- Modelling with differential equations

Further Statistics

- Geometric and negative binomial distributions
- Central limit theorem
- Probability generating functions
- Quality of tests

Decision Mathematics

- The travelling salesman problem
- The simplex algorithm