Maths

Year 13

Curriculum Overview

Intent: This course will enable pupils to understand mathematics and mathematical processes in a way that promotes confidence, fosters enjoyment and provides a strong foundation for progress to further study. It extends their range of mathematical skills and techniques. With the application mathematics in other fields of study and be aware of the relevance of mathematics to the world of work and to situations in society in general. They will use their mathematical knowledge to make logical and reasoned decisions in solving problems both within pure mathematics and in a variety of contexts and communicate the mathematical rationale for these decisions clearly.

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2
Core Course Topic: These topics are taught through the identified terms. They are taught in small bitesize chunks and revisited regularly.	**Pure** -Proof -Algebraic and Partial fractions -Binomial Theorem -Series and Sequences -Trigonometry **Applied** -Regression and Correlation -Moments	**Pure** -Differentiation -Series and Sequences -Trigonometry -Binomial Theorem -Numerical Methods -Parametric Equations **Applied** -Probability -Forces at any angle	**Pure** -Parametric Equations -Functions and Modelling -Series and Sequences -Differentiation -Integration **Applied** -Normal Distribution -Application of Kinematics	**Pure** -Numerical Methods -Integration **Applied** -Application of Forces -Further Kinematics
Additional support links: Here are links to additional resources which will help your child	**Partial Fractions** 1 **Binomial Theorem** 1 **Series and Sequences** 1 2 **Trigonometry** 1 2 **Regression and Correlation** 1 **Moments** 1	**Differentiation** 1 **Series and Sequences** 1 2 **Trigonometry** 1 **Binomial Theorem** 1 **Numerical Methods** 1 **Parametric Equations** 1 2 **Probability** 1 **Forces at any angle** 1	**Parametric Equations** 1 **Functions and Modelling** 1 **Series and Sequences** 1 **Differentiation** 1 **Integration** 1 **Normal Distribution** 1 2 3 **Application of Kinematics** 1	**Numerical Methods** 1 **Integration** 1 2 3 **Application of Forces** 1 2 **Further Kinematics** 1
Knowledge: Included here is the specific knowledge your child will learn in detail	-Use proof by contradiction -Convert an expression into partial fractions -Expand $(a+bx)^n$ for any rational constant n -Understand and use arithmetic and geometric sequences -Finding, arc length, area of sectors and segments in radians -Understand linear and exponential regression models -Calculate the moments around a point	-Differentiation using chain, product and quotient rules. -Understand and use arithmetic and geometric series -Small angle Approximations and using trigonometric identities to solve equations -Using Partial fractions to expand binomial expressions -Locating roots and using iteration -Convert Parametric equations into cartesian form -Understand and use conditional probability, -Resolving forces	-Use parametric equations in modelling -Sketch and transform a modulus graph -Generate sequences from recurrence relation -Solve problems with connected rates of change -Set up differential equations -Integration using reverse chain rule -Finding probabilities, mean, standard deviation and hypothesis testing data with normal distribution -Horizontal projectiles	-Use the Newton Raphson method to find an approximation to the solutions of equations -Integration by substitution, by parts and using partials fractions -Solve and model with differential equations -Using friction and solving forces in equilibrium -Using calculus/vectors in kinematics in 2 dimensions
Common Lexicon: These are the key words and terms learnt. These can be found on knowledge organisers.	Contradiction, Coefficient, Improper Algebraic Fraction, Infinite Series, Sequence, Series, Arithmetic sequence, Radian, Arc Length, Sector, Segment, Bivariate Data, Variable, Interpolation, Extrapolation, Coplanar Forces, Lamina	Concave, Convex, Common ratio, Converging, Divergent, Cosecant, Secant, Cotangent, Root, Continuous function, Cartesian equation, Parametric Equation, Mutually exclusive, Intersection, Union, Complement, Resultant force, Weight	Derivative, Differential equation, Trapezium rule, coplanar vectors, magnitude, mean standard deviation, probability, standardise, Velocity, Displacement, Acceleration	Static Equilibrium, Friction, Modelling, Particles, Velocity, Acceleration, Displacement, Integration, Differentiation, Vector, Constraints