Maths

Year 12

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	SUMMER 1	SUMMER 2
	Assessment 1			**Assessment 2**		
Core Course Topic: These topics are taught through the identified terms. They are taught in small bitesize chunks and revisited regularly.	Pure - Algebra and functions - Coordinate Geometry - Vectors Applied -Statistical Sampling -Quantities and Units -Data representation	Pure -Algebra and functions - Trigonometry - Differentiation Applied -Probability -Constant Acceleration -Data Representation	Pure - Co-ordinate geometry -Integration - Further Algebra -Exponential and Logarithms -Algebra and functions Applied - Data Representation - Kinematics	Pure - Further Algebra -Vectors -Trigonometry Applied -Forces and Newton's Law -Statistical Distribution	Pure - Algebra and Functions -Differentiation Exponential and Logarithm Trigonometry Applied -Hypothesis Testing -Variable Acceleration	Pure - Trigonometry -Co-ordinate Geometry Integration Exponential and Logarithm Applied Revision
Additional support links: Here are links to additional resources which will help your child	**Algebra and functions** 1 2 3 4 **Coordinate Geometry** 1 2 3 4 **Vectors** 1 2 **Statistical Sampling** 1 2 **Data representation** 1 2 3	**Algebra and functions** 1 **Trigonometry** 1 2 **Differentiation** 1 2 3 **Probability** 1 2 3 4 **Constant Acceleration** 1 2 3 **Data Representation** 1	**Co-ordinate geometry** 1 **Integration** 1 2 3 **Further Algebra** 1 2 **Exponential and Logarithms** 1 **Algebra and functions** 1 2 3 **Data Representation** 1 **Kinematics** 1 2 3 4	**Further Algebra** 1 2 **Vectors** 1 **Trigonometry** 1 2 **Forces and Newton's Law** 1 2 3 **Statistical Distribution** 1 2 3	**Algebra and Functions** 1 **Differentiation** 1 2 3 **Exponential and Logarithm** 1 2 3 **Trigonometry** 1 **Hypothesis Testing** 1 2 3 4 **Variable Acceleration** 1 2	**Trigonometry** 1 **Co-ordinate Geometry** 1 2 3 **Integration** 1 **Exponential and Logarithm** 1
Knowledge: Included here is the specific knowledge your child will learn in detail	-Application of algebraic manipulation and index laws - Use the rules of surds and rationalise denominators -Solve quadratic equations -Find the equation of a line including parallel and perpendicular - Carry out arithmetic operators on vectors and magnitude and direction -Understanding sampling techniques -Understanding mathematical models -Calculate measures of location and variation	- Solve simultaneous equation using elimination, substitution and graphically - Use sine, cosine and area (sine) rule -Understand and transform trigonometric graphs -Perform basic differentiation -Find second derivatives -Solve linear and quadratic inequalities -Use derived quantities and units -Calculate probabilities from Venn and tree diagrams -Interpret displacement and velocity time graphs - Draw and interpret boxplots and cumulative frequency graphs	- Find lengths and areas given the equation of straight line -Integrate simple polynomials -Use factor Theorem and perform algebraic division - Introduction to exponential and exponential modelling -Sketching cubic, quartic and reciprocal graphs -Draw and interpret histograms - Apply constant acceleration formulae to solve problems -Investigate correlation and use regression lines	-Use binomial expansion to expand brackets -Find unknown coefficients and make approximations using binomial expansion -Use vectors to solve geometric problems -Apply methods of proof -Solve trigonometric equations within a given interval -Use Newton's law -Calculate probabilities using binomial distribution	-Apply transformations and sketch the resultant graph -Differentiate to find gradients, tangents and normal -Using second derivative to determine maxima and minima -Understand laws of logarithm and use to solve equations -Solve complicated trigonometric equations -Perform a hypothesis test for a binomial model -Use calculus to model motion of a particle	-Solve trigonometric equations with produces quadratics -Find the equation of a circle -Find points of intersection between a circle and a line -Evaluate definite integral and find area below a curve -Exponential modelling
Common Lexicon: These are the key words and terms learnt. These can be found on knowledge organisers.	Integer, Product, Surd, Irrational, Rational, Base, Quadratic, Function, Discriminant, Gradient, Parallel, Perpendicular, Linear, Magnitude, Population, Census, Sampling unit, Sampling frame, Strata	Equation, Inequalities, Periodic, Derivative, Intersection, Complement, Mutually exclusive, Union, Sample space, Displacement, Velocity, Acceleration, Boxplot, Cumulative, Outliers	Cubic function, Quartic function, Reciprocal, asymptote, Polynomial, Integral, Integrand, Correlation, Regression, Bivariate, Dependent, Independent, Interpolation, Extrapolation	Proof, Axioms, Theorems, Binomial expansion, Factorial, Coefficients, Approximation, Combinations, Identities, Resultant, Scalar, Equilibrium, Stationary, Resultant, Weight, Reaction, Connected particles, Distribution, Cumulative probability	Gradient, Tangent, Normal, Stationary points, Function, Maxima, Minima, Limits, Null hypothesis, Alternate hypothesis, Binomial model, Identities, Differentiation, Integration, Vectors, Test Statistic, Critical Value, Critical Region, Significance level	Definite Integral, Intersection, Parameters Natural Logarithm, Base, Constraints