HOE VALLEY SCHOOL

MATHS A-LEVEL

The Maths curriculum looks to develop students ability to contextualise their knowledge in to real-world terms e.g. currency exchange, instead of an autopilot rote-learning approach. We look to develop independent logical thinkers who are able to problem solve and provide solutions, as opposed to producing students who can simply remember a formula.

"To every problem, there is a solution"

YEAR 12

Students will link their KS4 studies to the Pure content of algebraic concepts, quadratics, straight line graphs, equations and inequalities. They will extend their understanding of circles, graphs and transformations of graphs and vectors.
In addition to the Pure content the students will strudy the applied subjects of Statistics and Mechanics. Students will be introduced to the binomial expansion, trigonometric ratios, identities and equations. Their lives will be transformed by differentiation and integration. And they will be able to use logarithms, linking them to their inverse of exponentials.
Over the year they will apply a range of skills to solve complex problems, and learn how to construct clear mathematical arguments and proofs. Throughout the course, they are encouraged to think critically, justify their methods, and communicate their reasoning effectively.

YEAR 13

Students will continue with proof by contradiction, and further algebraic methods. They will extend the binomial expansion to cater for negative and fractional indices. KS4 sequences will be extended to look at geometric and arithmetic sequences, and their summations including to infinity.
A new insight into Functions and graphs will be revealed with the modulus of a function and combined transformations.
Differentiation and integration will be extended from year 1, and an introduction to the trapezium rule. Numerical methods will also be introduced and the use of the Newton Raphson method.
Trigonometric functions and modelling will be used and how to use parametrics to model real life situations. Finally vectors in 3D will be visited.
Mocks will take place and feedback given to allow students to focus their studies on their weakest areas, and build confidence ahead of their final assessments.

WR Topics with the WR logo are directly linked to the Hoe Valley School Work Ready Agenda.

Revision

A-Level Exams

PURE: Vectors

PURE: Integration

YEAR 13

PURE: Algebraic Methods, Functions & Graphs, Sequences & Series, Binominal Expansion, Radians

PURE: Trigonometric Functions, Trigonometry & Modelling, Parametric Equations, Differentiation, Numerical Methods

MECHANICS: Projectiles, Application of Forces, Kinematics
STATISTICS: Regression & Correlation, Probability, Normal Distribution

STATISTICS: Probability, Statistical Distribution, Statistical Hypothesis Testing
MECHANICS: Forces & Newton's Law, Kinematics
MECHANICS: Moments, Forces at Any Angle

PURE: Vectors, Differentiation, Integration

PURE: Integration, Exponentials & Logarithms
STATISTICS: Statistical Sampling, Data Presentation & Interpretation
MECHANICS: Modelling, Quantities & Units, Kinematics

YEAR 12

PURE: Straight Line Graphs, Circles, Algebraic Methods, Binominal Expansion, Trig Ratios, Trig Identities & Equations

PURE: Algebraic Expressions, Quadratics, Equations & Inequalities, Graphs & Transformations

Number

Ratio, Proportion & Rates of Change

Statistics & Probability

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Algebra

Geometry & Measures

Applied Mathematics