MATHEMATICS - CORE

YEAR 13

AUTUMN 1

Core – Functions and Graphs -Modulus Function -Mappings -Composite and Inverse Functions -Solving modulus problems	**Core – Review of Trigonometry** -Sine Rule, Cosine Rule & Area of a triangle -Graphs of sine, cosine and tangent -Transformations Graphs -Angles in all four quadrants -Exact Values -Trigonometric Identities and Equations	**Core – Trigonometric Functions** -Secant, Cosecant and Cotangent -Trigonometric Identities -Inverse Trigonometric Functions	**Prior Learning** -Transformation of Graphs -Basic Trigonometry (including radians) -Trigonometric Graphs

AUTUMN 2

Core – Trigonometry and Modelling -Addition Formulae -Double Angle Formulae -Solving Trigonometric Equations -Proof	**Core – Parametric Equations** -Solving problems involving Parametric Equations	**Core – Algebraic Methods** -Proof	**Prior Learning** -Proof -Graphs

SPRING 1

Core – Differentiation -Differentiation of sinx, cosx, exponentials and logarithms -The Chain Rule -The Product Rule -The Quotient Rule -Parametric Differentiation -Implicit Differentiation -Using Second Derivatives to solve problems	**Core – Numerical Methods** -Locating Roots -Iterations -The Newton-Raphson Method	**Prior Learning** -Basic Differentiation -Iteration (GCSE)

SPRING 2

Core – Integration -Further Integration -Reverse Chain Rule -The Trapezium Rule	**RAR** Teachers will use assessment data to revisit topics to improve these skills.	**Prior Learning** -Basic Integration -Solving Equations

SUMMER 1

RAR Teachers will use assessment data to revisit topics to improve these skills.	**Prior Learning** All topics covered in years 12 and 13

CAREERS LINKS

Accountancy, banking insurance, bookmaking, risk analyst, news reporting, analyst, business person, performance analyst. actuaries, economists, meteorologist, welders, construction, architecture, games designer, software design & IT, engineering.

CHARACTER LINKS

Traits of determination, perseverance and resilience (performance virtues) are fostered. Judgement, reasoning and reflection skills are also fostered (intellectual virtues).

KEY ASSESSMENT DATES

Pupils will have regular assessments to review and revise Yr.12 and Yr.13 topics. These will take place both during the lessons, and independently.

MATHEMATICS - APPLIED

YEAR 13

AUTUMN 1

Mechanics – Moments -Moments -Resultant Moments -Equilibrium -Centres of Mass -Tilting	**Statistics – Statistical Distributions** -Probability Distributions -Binomial Distributions -Cumulative Probabilities	**Statistics – Hypothesis Testing** -Hypothesis testing -Finding Critical Values -One and Two Tailed tests	**Prior Learning** -Binomial Distribution -Basic Probability

AUTUMN 2

Mechanics – Applications of Forces -Static Particles -Modelling with Statics -Friction and static particles -Static Rigid Bodies -Dynamic and Inclined Planes -Connected Particles	**Statistics – Correlation** -Correlation -Linear Regression	**Statistics – Regression, Correlation and Hypothesis Testing** -Exponential Models -Measuring correlations -Hypothesis testing for zero correlation	**Prior Learning** -Constant acceleration -Moments -Exponential Modelling -Hypothesis Testing

SPRING 1

Mechanics – Further Kinematics -Vectors in Kinematics -Vector Methods with Projectiles -Variable Acceleration -Differentiating Vectors -Integrating Vectors	**Mechanics – Projectiles** -Horizontal and Vertical components -Projection at any angle -Projectile motion formulae	**Prior Learning** -2D Vectors -Integration -Differentiation -Constant Acceleration

SPRING 2

Statistics – The Normal Distribution -Normal Distribution – Inverse and Normal -Approximating a Binomial Distribution -Hypothesis testing with the normal distribution	**RAR** **Teachers will use assessment data to revisit topics to improve these skills.**	**Prior Learning** -Hypothesis Testing Basic Probabilities

SUMMER 1

RAR **Teachers will use assessment data to revisit topics to improve these skills.**	**Prior Learning** All topics covered in years 12 and 13