

Subject: Maths

Year group: Year 12 and 13

Department Curriculum Vision:

	Autumn Term 1	Autumn Term 2
Content: (Know what...)	Year 12: Indices, Quadratic functions, Equations and Inequalities, Straight line graphs, Constant Acceleration formula, Graphs and transformations, Differentiation, Year 13: Moments, Differentiation. Trigonometric functions, trigonometric modelling	Year 12 Differentiation continued, algebraic methods, Circles Integration. Data collection, measures of location and spread Year 13: Forces and friction, application of forces, integration, probability, sequences and series, normal distribution
Skills: (know how...)	Year 12 Maths • Apply laws of indices, simplify and rationalise surds, factorise and expand expressions • Solve quadratic equations using a range of tools and use this to sketch and interpret quadratic graphs including in real life contexts • Solve problems using straight lines including parallel and perpendicular lines • Solve linear and quadratic simultaneous equations and inequalities • Sketch and transform non-linear graphs • Use the constant acceleration formula • Differentiate functions and finding the equation of tangents and normals Year 13 Maths:	Year 12 Maths: • Use differentiation to find stationary points and modelling real life situations • Divide polynomials and apply the factor theorem • Use the equation of a circle to solve problems • Understand different types of data and sampling methods • Be familiar with the large data set • Calculate measures of location and spread • Integrate to find area under curves Year 13 Maths • Solve problems involving rough inclined planes • Solve problems involving motion including pulleys, static rigid bodies and inclined planes • Calculate conditional probabilities using tables, probability trees and venn diagrams • Use a normal distribution to solve problems and carry out

	• Differentiate complex functions including trigonometric functions, chain product and quotient rules, parametrics • Solve problems involving differential equations • Calculate moments around a point and apply this to different scenarios • Use radian measure to find areas and lengths of sectors and arcs • Use the reciprocal trig functions and trigonometric identities • Use the addition formula to model trigonometric problems	hypothesis tests • Prove and use formula for geometric and arithmetic series • Generate sequences from recurrence relationships • Integrate more complex functions involving trigonometric functions, integration by substitution and integration by parts
Key vocabulary	Y12: Indices, functions, quadratics, inequalities, suvat, tangent, normal, gradient, parallel, perpendicular, Y13: Parametric, concave, convex, stationary point, reciprocal, maximum, minimum, radian. Sector, arc, moment, force, reaction	Y12: Stationary, maximum, minimum, standard deviation, variance, interpolation, LDS, discrete, continuous, grouped, polynomial, factor, Y13: Arithmetic, geometric, recurrence, substitution, integration, limits, sum to infinity, conditional, friction,
Mid Term Assessment	Initial assessment Y13: Graded homework on topics to date.	Y12: Differentiation & Algebraic Methods Y13: Graded homework on topic to date.
End Term Assessment	Y12: Constant Acceleration, Equations and Inequalities Y13: Graded homework on topics to date.	Y12: Integration, Straight Line Graphs and Circles Y13: PPE

	Spring 1	Spring 2
Content: (Know what...)	Year 12: Trigonometry, Trigonometric IDentities and equation, forces and motion, representation of data, correlation, probability Year 13: Integration continued, projectiles, kinematics, parametrics, binomial expansion, regression and hypothesis testing, numerical methods	Year 12 Variable acceleration, binomial distribution, hypothesis testing Year 13: Complete Spring 1 and revision/consolidation
Skills: (Know how...)	Y12: • Represent data in a box plot, cumulative frequency graph and histogram • Calculate probabilities from venn diagrams and tree diagrams • Understand and use Newton's first, second and third laws • Calculate missing angles and sides in non-right angled triangles • Recognise and transform trigonometric graphs • Solve trigonometric equations Year 13: • Convert between parametric and cartesian form • Differentiate and integrate parametric functions • Expand binomials where n is not a rational number • Locate iteration and the Newton-Raphson method to locate roots • Understand the PMCC and carry out hypothesis tests for correlation	Y12: • Use the binomial expansion to expand expressions • Use calculus to solve problems when displacement, velocity and acceleration are given as functions of time • Use the binomial distribution to model and calculate probabilities

	• Solve problems involving particles projected at an angle • Work with vectors for displacement, velocity and acceleration and differentiate and integrate these with respect to time	
Key vocabulary	Y12: Identity, equation, prove, force, Newton's laws, histogram, correlation, quartiles. Range, cumulative. Mutually exclusive, independent Y13: Parametric form, roots, iteration, Newton-Raphson, binomial, projectiles,	Y12: Binomial, coefficient, expansion, displacement, speed, velocity, hypothesis
Mid Term Assessment	Y12: Graphs Transformation, Data Collection, Measure of Location and Spread Y13: Graded homework on topics to date.	Y12: Probability, Forces and Motion Y13: Graded homework on topics to date.
End Term Assessment	Y12: Trigonometry, Trigonometric Identities, Representation of Data and Correlation. Y13: Graded homework on topics to date.	Y12: Variable Acceleration and Binomial Expansion Y13: Easter PPE

	Summer 1	Summer 2
Content: (Know what...)	Y12: Exponentials and Logarithms, vectors, consolidation Y13: Revision and exams	Y12: Algebraic methods and functions
Skills: (Know how...)	• Calculate the magnitude and direction of vectors and use vectors to solve geometrical problems • Sketch and transform exponential and logarithmic graphs • Use and interpret models that use exponential and logarithmic functions • Recall and apply the laws of logarithms	• to multiply, divide and simplify algebraic fractions • to convert and algebraic expression into partial fractions • Use the modulus function and calculate composite and inverse functions
Key vocabulary	Y12: Logarithms, exponentials, vectors, magnitude, direction	Y12: Contradiction, linear factors, rational, irrational, modulus, mapping, range, domain
Mid Term Assessment	Y12: Binomial Distribution, Hypothesis testing and Vectors	
End Term Assessment	In class assessment	Y12: Summer PPE

Additional information

Homework	Homework will be assigned from teachers using past exam questions and the Edexcel textbooks (available to students online)
Extra curricular and enrichment opportunities	Senior Maths Challenge, trips
Useful links that will support learning	Physics and Maths Tutor, Maths Genie and Exam Solutions all have past exam papers, video explanations and additional questions
How parents can support learning	Regularly monitor students that they are completing homework as well as regularly revision.