MATHEMATICS Department - Curriculum Information

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 7	Sequences Algebraic Notation Equality and Equivalence	Place Value Integers & Decimals Fractions, Decimals and Percentages	Addition & Subtraction Problems Solving Problems with Multiplication and Division Fractions & Percentages of Amounts	Four Operations with Directed Numbers Addition & Subtraction with Fractions	Constructing, measuring and using geometric progression Developing Geometric reasoning	Developing Number Sense Sets and Probability Prime Numbers and Proof
Literacy Focus	Capital Letters Red Pen Moments should be using full sentences.	End sentence punctuation Ensure red pen moments use correct punctuation	Spelling Highlight any new key words and ensure pupils learn to spell them correctly	Ambiguous vocabulary Introduce new key words and use as a matter of course	Ambitious punctuation	Paragraphing
Revision		Test covering Autumn 1		Test Covering Autumn 1 / 2 and Spring 1		End of year test to cover all Year 7
Year 8	Ratio and Scale Multiplicative change Multiplying and dividing fractions	Working in the Cartesian plane Representing data Tables and probability	Brackets, equations and inequalities Sequences Indicies	Fractions and percentages Standard Index Form Number sense	Angles in parallel lines and polygons Area of trapezia and circles Line symmetry and reflection	The data handling cycle Measures of Location
Literacy Focus	Capital Letters Red Pen Moments should be using full sentences.	End sentence punctuation Ensure red pen moments use correct punctuation	Spelling Highlight any new key words and ensure pupils learn to spell them correctly	Ambiguous vocabulary Introduce new key words and use as a matter of course	Ambitious punctuation	Paragraphing
Revision		Test covering Autumn 1 & anything from earlier years		Test Covering Autumn 1 / 2 and Spring 1 & anything from earlier years		End of year test to cover all Mathematics work
Year 9	Straight Line Graphs Forming and solving equations Testing Conjectures	Three dimensional shapes Construction and congruency	Numbers Using Percentages Maths and money	Deduction Rotation and translation Pythagoras' Theorem	Enlargement and similarity Solving ration and proportional problems Rates	Probability Algebraic Representation
Literacy	Capital Letters Red Pen Moments should be using full sentences.	End sentence punctuation Ensure red pen moments use correct punctuation	Spelling Highlight any new key words and ensure pupils learn to spell them correctly	Ambiguous vocabulary Introduce new key words and use as a matter of course	Ambitious punctuation	Paragraphing
Revision		Test covering Autumn 1 & anything from earlier years		Test Covering Autumn 1 / 2 and Spring 1 & anything from earlier years		End of year test to cover all Mathematics work

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Year 10	**Higher** Basic Calculation Skills Whole Number Theory Algebraic Expressions Functions & Sequences Properties of shapes & solids Construction & Loci Further Algebraic Expressions	**Higher** Equations Angles Fractions	**Higher** Decimals Units of Measurements Percentages Algebraic Formulae	**Higher** Perimeter Area Approximation & Estimates Straight Line Graphs Graphs of Equations & Functions	**Higher** Three Dimensional Shapes Volume & Surface Area Calculations with ratio Basic probability and experiments Combined events and probability diagrams Powers & Roots Standard Form	**Higher** Surds Plane Vector Geometry Revision & Recap of Yr10
	Foundation Basic Calculation Skills Whole Number Theory Algebraic Expressions Functions & Sequences	**Foundation** Properties of shapes & solids Construction & Loci Further Algebraic Expressions	**Foundation** Equations Angles Fractions	**Foundation** Decimals Units of Measurement Percentages Algebraic Formulae	**Foundation** Perimeter Area Approximation & Estimation Straight Line Graphs	**Foundation** Graphs of Equations & Functions Three dimensional shapes Volume & Surface Area
Literacy Focus	Capital Letters Red Pen Moments should be using full sentences.	End sentence punctuation Ensure red pen moments use correct punctuation	Spelling Highlight any new key words and ensure pupils learn to spell them correctly	Ambiguous vocabulary Introduce new key words and use as a matter of course	Ambitious punctuation	Paragraphing
Year 11 (2022)	**Higher** Plane Isometric Transformations Congruent Triangles Similarity Pythagoras' Theorem	**Higher** Trigonometry Circle Theorems	**Higher** Discrete growth and decay Direct and Inverse proportion Collecting and Displaying Data Analysing Data	**Higher** Interpreting Graphs Algebraic Inequalities Transformations of curves and their equations.	Past Paper Revision Study Leave GCSE Exams	
	Foundation Calculations with ratio Basic Probability & Experiments Combined events and Probability diagrams Powers & Roots Standard Form Plane vector Geometry	**Foundation** Plane Isometric Transformations Congruent Triangles Similarity	**Foundation** Pythagoras' Theorem Trigonometry Discrete growth and decay Direct and Inverse proportion	**Foundation** Collecting and Displaying Data Analysing Data Interpreting Graphs Algebraic Inequalities		
Literacy Focus	Capital Letters Red Pen Moments should be using full sentences.	End sentence punctuation Ensure red pen moments use correct punctuation	Spelling Highlight any new key words and ensure pupils learn to spell them correctly	Ambiguous vocabulary Introduce new key words and use as a matter of course		

MATHEMATICS Department - Curriculum Information

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 12	Basic algebraic manipulation, indices and surds (3) **Binomial expansion (4)** **Quantities and units in mechanics** Introduction to mathematical modelling and standard S.I units of length, time and mass. Definitions of force, velocity, speed, acceleration, weight and displacement. Vector and scalar quantities (3) Simultaneous equations – linear and quadratic. Graphs (Cubic, **Quartic** Reciprocal) (3) Quadratic functions – factorising, solving, graphs and the **discriminant (3)** Statistics **Large data set** **Measures of location** **Coding** **Statistical distributions (4)** Vectors Definitions, magnitude/direction, addition & scalar multi. (2)	**Differentiation** **Definition** **Differentiating polynomials** **Second derivatives** **Gradients** **Tangents** **Normals** **Maxima and minima (6)** Coordinate geometry in the (x,y) plane. **Straight line** Parallel/perpendicular **Length and area problems** Circles **Equation of a circle** **Geometric problems on a grid (4)** Vectors Position vectors Distance between two points Geometric problems (3) **Algebraic division** **Factor theorem** **Proof (4)**	Mechanics: kinematics 1 Graphical representation of velocity, acceleration and displacement **Motion in a straight line under constant acceleration;** *suvat* **formulae, vertical motion under gravity (4)** **Integration** **Definition as opposite of differentiation, indefinite integrals of** x^n **Definite integrals and areas under curves (4)** Statistics Probability: mutually exclusive events; independent events **Hypothesis testing; language; significance levels; hypothesis tests involving the binomial distribution (4)** Transformations Transforming graph F(x) notation (4)	**Integration** **Definition as opposite of differentiation, indefinite integrals of** x^n **Definite integrals and areas under curves (8)** **Forces and Newton's laws** **Newton's first law, force diagrams, equilibrium, introductions to** $\underline{i}, \underline{j}$ **system.** **Newton's 2nd law, connected particles; Newton's 3rd law: equilibrium,problems involving smooth pulleys (8)** Inequalities Linear and quadratic including graphical solutions (4) Trigonometry Trig ratios and graphs (8)	**Trigonometric identities and equations (10)** Mechanics **Variable force** **Calculus to determine rates of change for kinematics** **Use of integration for kinematics problems (4)** **Exponentials and logarithms** **Exponential functions and natural logarithms (10)** Statistics Interpretation of diagrams, including scatter graphs **Regression lines** **Recognise and interpret outliers** **Draw conclusions from statistical problems (3)**	**Year 2 – Series and sequences** **Arithmetic and geometric progressions** **Sigma notation** **Recurrence and iterations (5)** Year 2 - Simplifying algebraic fractions Partial fractions (5) Year 12 catch up (2) **Year 2 – Numerical methods** **Location of roots** **Solving by iterative methods** **Newton-Raphson method (5)**
Literacy Focus	**Capital Letters**	**End sentence punctuation**	**Spelling**	**Ambitious vocabulary**	**Ambitious punctuation**	**Paragraphing**

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Revision	Flashcards Exam questions	Exam questions	Mind maps Exam questions	Memory techniques Exam questions	Exam questions	Exam questions
Year 13	Trigonometry Radians, arcs and sectors Small angles (5) Trigonometry Secant, cosecant, cotangent Inverse trig functions Compound and double angle formulae $R \cos (x \pm \alpha)$ or $R \sin (x \pm \alpha)$ Proving trig identities (15) Vectors Use of vectors in 3 dimensions Knowledge of column vectors and **i, j** and unit vectors (4)	Parametric equations (4) Differentiation Differentiating sin x and cos x from first principles Differentiating exponentials and logarithms Differentiating products, quotients, implicit and parametric functions Second derivatives Rates of change problems (16) Proof Including proof by deduction and proof by contradiction (3) Transformations Modelling with transformations (4) Modulus function Composite and inverse functions (4)	The Normal distribution Understand and use the Normal distribution Use the Normal distribution as an approximation to the binomial distribution Select the appropriate distribution Statistical hypothesis testing for the mean of the Normal distribution (14) Integration Integrating x^n (including when x = -1), exponentials and trigonometric functions (4) Forces – resolving forces Further kinematics Constant acceleration (equations of motion in 2D; the **i,j** system Applications of kinematics – projectiles (10)	Integration Using the reverse of differentiation and trigonometric identities Integration by substitution Integration by parts Use of partial fractions Areas under graphs or between two curves The trapezium rule Differential equations (22) Forces at any angle; Friction forces including the coefficient of friction Application of forces: equilibrium and statics of a particle, dynamics of a particle (9)	Probability Using set notation Assumptions Regression and correlation Change of variable Correlation coefficients Statistical hypothesis testing for zero correlation (10) Further kinematics: variable acceleration and use of calculus Moments Application of forces (4) The Binomial theorem Expanding $(a + bx)^n$ for rational n; knowledge of range of validity Expansion of functions using partial fractions.	
Literacy Focus	Capital Letters	End sentence punctuation	Spelling	Ambitious vocabulary	Ambitious punctuation	Paragraphing
Revision	Flashcards Exam questions	Exam questions	Mind maps Exam Questions	Memory techniques Exam questions	Exam questions	Exam questions