

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 7	<p>Place Value</p> <ul style="list-style-type: none"> Ordering positive and negative integers and decimals Using symbols =, ≠, <, >, ≤, ≥ Writing numbers in words Multiplying/dividing by powers of 10 Using a ruler to measure lines and a protractor to measure angles Measures Rounding Finding the midpoint of two numbers Mode & median <p>Addition & Subtraction</p> <ul style="list-style-type: none"> Addition Subtraction Inverse operations, commutativity and associativity 	<p>Addition & Subtraction (continued)</p> <ul style="list-style-type: none"> Perimeter Labelling segments and angles correctly Basic angle & line facts including notation Range of a dataset Money & finance Time Tables including two-way, distance and timetables Frequency trees Bar charts, pictograms, time and line graphs <p>Multiplication & Division</p> <ul style="list-style-type: none"> Multiplication tables and associated division facts Multiplication Multiples and LCM 	<p>Multiplication & Division (continued)</p> <ul style="list-style-type: none"> Division Inverse operations & function machines Factors and HCF Area Mean Volume <p>Powers, Roots & Number types</p> <ul style="list-style-type: none"> Square and cube numbers Calculating powers Calculations with powers Roots Bounds of roots <p>Prime Factorisation</p> <ul style="list-style-type: none"> Prime numbers Product of primes Venn diagrams Finding HCF/LCM using prime factorisation 	<p>Order of Operations</p> <ul style="list-style-type: none"> Order of operations Inverse order of operations e.g. "I think of a number" Function machines Using a calculator (and other technology) to calculate results accurately <p>Directed (Negative) Numbers</p> <ul style="list-style-type: none"> Understanding negative numbers Addition and subtraction with negatives Multiplication and division with negatives Negative numbers using a calculator including powers 	<p>Fractions</p> <ul style="list-style-type: none"> Concept of a fraction Fractions vs. terminating decimals Equivalent fractions including simplifying Proper, improper fractions and mixed numbers Adding and subtracting fractions Fractions of amounts One quantity as a fraction of another Find the whole from a fraction Multiplying and dividing fractions Reciprocals 	<p>Percentages</p> <ul style="list-style-type: none"> Concept of a percentage Equivalence of fractions, decimals & percentages Percentage of amounts Percentage increase and decrease One quantity as a percentage of another Calculating a percentage change Pie charts Financial problem-solving <p>Estimation</p> <ul style="list-style-type: none"> Rounding revision Estimation <p>Proof</p> <ul style="list-style-type: none"> Conjectures Counterexamples

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
YEAR 8	<p>Manipulating & Simplifying Expressions</p> <ul style="list-style-type: none"> Algebraic vocabulary and notation Substitution Collecting like terms Expanding a single bracket Factorising into a single bracket Simple algebraic fractions Simple algebraic proof <p>Linear Equations & Inequalities</p> <ul style="list-style-type: none"> One-step solutions Two-step solutions Solving equations Inequalities 	<p>The Cartesian Grid & Graphs</p> <ul style="list-style-type: none"> Plotting 2D coordinates in four quadrants Sketching graphs of straight lines and quadratics using a table of values Linear graphs: $y = mx + c$ Mid-point of a line segment <p>Symmetry</p> <ul style="list-style-type: none"> Line Symmetry Reflection Rotational Symmetry Rotation Translation 	<p>Sequences</p> <ul style="list-style-type: none"> Recognise simple geometric sequences Generate terms of a sequence from term-to-term and position to term rules <p>Ratio</p> <ul style="list-style-type: none"> Ratio notation Expressing relationships as ratios Simplifying ratios Unit ratios Expressing fractions as ratios Dividing a quantity into a ratio <p>Proportional Reasoning</p> <ul style="list-style-type: none"> Direct proportion - value for money, exchange rates, metric to imperial etc. Conversion (linear) graphs 	<p>Proportional Reasoning (continued)</p> <ul style="list-style-type: none"> Scaling up/down - recipes, shapes etc. Scale drawings and maps <p>Shapes, Solids & Angles</p> <ul style="list-style-type: none"> Angles on a straight line, around a point, vertically opposite Angles in parallel lines (alternate, corresponding, co-interior) Properties of polygons including triangles and quadrilaterals Properties of 3D solids Interior and exterior angles in polygons Proof - Angles 	<p>Perimeter, Area, Volume</p> <ul style="list-style-type: none"> Perimeter including circumference of a circle Converting metric measures Area of compound shapes Area of a circle Volume of prisms and cylinders Perimeter and area of compound shapes including circles <p>Statistics</p> <ul style="list-style-type: none"> Statistical enquiry Frequency tables Bar charts Pictograms 	<p>Statistics (continued)</p> <ul style="list-style-type: none"> Vertical line graphs Frequency diagrams Pie charts Line graphs Scatter graphs Averages, spread & outliers Using appropriate diagrams for a dataset Misleading graphs <p>Probability</p> <ul style="list-style-type: none"> Systematic listing Sets Probability notation including the Probability Scale Sample spaces Calculating probability

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YEAR 9	<p>Number Review of the four operations for integers and decimals from Y7. Extend to include:</p> <ul style="list-style-type: none"> Standard Form Counting rules (H) <p>Rounding, Estimation and Accuracy Review rounding and estimation skills from KS3. Extend to include:</p> <ul style="list-style-type: none"> Truncation Error intervals Upper and lower bounds (H) <p>Factors, Multiples and Primes Review of KS3. Extend knowledge of:</p> <ul style="list-style-type: none"> Problems with HCF/LCM <p>Fractions Review of KS3 content. Extend to include:</p> <ul style="list-style-type: none"> Recurring decimals to fractions (H) 	<p>Powers and Roots Review of content from KS3. Extend to include:</p> <ul style="list-style-type: none"> Negative integer powers Unit fraction powers (H) <p>Algebra Review of algebraic manipulation from KS3. Extend to include:</p> <ul style="list-style-type: none"> Index law problems which include use of zero, fractional and negative powers. <p>3D Shapes and the 2D Representations Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> Planes of symmetry 2D isometric representations Plans and elevations <p>Perimeter and Area Review and extend from Y8. Extend to include:</p> <ul style="list-style-type: none"> Surface area Problems involving algebra 	<p>Sequences Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> Nth Term Quadratic sequences <p>Percentages Review of content from Y7. Extend to include:</p> <ul style="list-style-type: none"> Compound interest (H) Reverse percentages (H) <p>Ratio Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> Difference problems Combining ratios Ratio, percentage, and fraction problems Ratio as a linear function (H) 	<p>Proportion Review of content from KS3. Extend to include:</p> <ul style="list-style-type: none"> Direct and inverse proportion problems Set up and use equations to solve proportion problems (H) <p>Shape Properties and Angles Review of content from KS3. Extend to include:</p> <ul style="list-style-type: none"> Multistep problems Problems involving algebra <p>Scale Drawing and Bearings Review of Scale drawing and maps from Y8. Extend to include:</p> <ul style="list-style-type: none"> Bearings Problems involving angle facts and bearings 	<p>Area and Circumference of a Circle Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> Length of an arc Area of a sector <p>Compound Measures Solve problems involving Speed, Density and Pressure formulae</p> <ul style="list-style-type: none"> Plot and interpret Distance-Time and Velocity-Time graphs <p>Equations and Formulae Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> Solving equations with unknowns on both sides. Forming equations using angle facts, perimeter, area. <p>Pythagoras' Theorem Understand and use Pythagoras' theorem</p> <ul style="list-style-type: none"> Show that a triangle is right angled Use Pythagoras' theorem in 3D (H) 	<p>Coordinates and Linear Graphs Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> Calculating gradients Graphs of the form $ax + by = c$ Equations of parallel lines Equations of perpendicular lines (H) <p>Quadratics Expand the product of two linear expressions</p> <ul style="list-style-type: none"> Factorise expressions of the form $x^2 + bx + c$ Use the difference of two squares Factorise expressions of the form $ax^2 + bx + c$ (H) Write expressions in completing the square form $(x + a)^2 + b$ (H) Expand the product of more than two linear expressions (H)

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YEAR 10	<p>Representing Data Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> • Frequency polygons • Stem and Leaf diagrams • Comparing distributions using charts • Interpolation and extrapolation • Causality • Time series graphs (H) <p>Summarising Data Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> • Compare distributions • Calculate averages from charts • Find the median, quartiles and interquartile range (H) <p>Quadratic Graphs Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> • Lines of symmetry, roots, intercepts and turning points • Sketching quadratic and cubic graphs (H) 	<p>Transformations Review content from KS3. Extend to include:</p> <ul style="list-style-type: none"> • Translations • Enlargements • Combinations <p>Congruence and Similarity</p> <ul style="list-style-type: none"> • Recognise congruent shapes • Use congruence to find missing sides and angles • Use similarity to find missing sides and angles • Prove congruence and similarity (H) • Use similarity to find missing lengths, areas and volumes (H) <p>Trigonometry</p> <ul style="list-style-type: none"> • Understand the trigonometric ratios • Work out missing sides and angles in right angled triangles • Know and use exact values of key angles • Use trigonometry in 3D shapes (H) 	<p>Percentages Review of content from Y9. Extend to include:</p> <ul style="list-style-type: none"> • Compound interest • Reverse percentages • Growth and Decay <p>Volume and Surface Area Review of content from KS3. Extend to include:</p> <ul style="list-style-type: none"> • Cones • Frustums • Pyramids • Spheres <p>Circle Theorems (H)</p> <ul style="list-style-type: none"> • Use and apply circle theorems to find missing angles • Prove circle theorems <p>Solving Quadratic Equations</p> <ul style="list-style-type: none"> • Solve equations of the form $x^2 + bx + c$ by factorising • Find approximate solutions graphically • Solve equations of the form $ax^2 + bx + c$ by factorising (H) • Use completing the square (H) • Use the quadratic formula (H) 	<p>Inequalities</p> <ul style="list-style-type: none"> • Representing on a number line • Solve linear inequalities • Use set notation to represent solution (H) • Represent inequalities graphically (H) • Solve quadratic inequalities (H) <p>Simultaneous Equations</p> <ul style="list-style-type: none"> • Write equations to represent situations • Solve linear by substitution, elimination and graphically • Solve linear/quadratic (H) <p>Surds (H)</p> <ul style="list-style-type: none"> • Simplify a surd • Simplify expressions involving surds • Rationalise the denominator 	<p>Probability Trees Review of content from Y9. Extend to include:</p> <ul style="list-style-type: none"> • Complete and use probability trees for dependent and independent events • Draw and use probability trees (H) <p>Venn Diagrams</p> <ul style="list-style-type: none"> • Use Venn diagrams to represent real life situations and abstract sets • Use Venn diagrams to calculate probabilities • Understand and use set notation <p>Properties of Polygons Review of content from Y8. Extend to include:</p> <ul style="list-style-type: none"> • Multistep problems • Algebra <p>Histograms and Cumulative Frequency (H) Draw and interpret</p> <ul style="list-style-type: none"> • Histograms • Cumulative frequency graphs • Boxplots 	<p>Real Life Graphs Review of content from Y9. Extend to include:</p> <ul style="list-style-type: none"> • Conversion graphs • Fixed charge and cost per unit graphs • Interpret gradient and intercept <p>Loci and Constructions</p> <ul style="list-style-type: none"> • Standard ruler and compass constructions • Solve loci problems using standard constructions <p>Mocks and Intervention</p> <p>Work Experience</p>

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YEAR 11	<p>Mocks and Intervention</p> <p>Vectors and Geometrical Proof</p> <ul style="list-style-type: none"> Understand and use vectors Solve 2D geometrical vector problems (H) Use vectors to produce geometrical arguments and proof (H) <p>Fractional and Negative Indices</p> <p>Review of content from Y9. Extend to include:</p> <ul style="list-style-type: none"> Non unit fractional powers (H) <p>Functions (H)</p> <ul style="list-style-type: none"> Understand and use function notation Substitute into a function Composite functions Inverse functions Equations involving function notation 	<p>Further Trigonometry</p> <p>Review of content from Y10. Extend to include:</p> <ul style="list-style-type: none"> Exact trig values Sine rule for area (H) Sine and Cosine rules (H) <p>Proof</p> <ul style="list-style-type: none"> know the difference between an equation and an identity argue mathematically to show algebraic expressions are equivalent Use algebra to support and construct proof (H) <p>Graphs and Graph Transformations</p> <p>Review of content from Y10. Extend to include:</p> <ul style="list-style-type: none"> Cubic and reciprocal graphs Exponential and trigonometric graphs (H) Graph transformations (H) 	<p>Area under a graph & gradient of a curve (H)</p> <ul style="list-style-type: none"> Estimate area under a graph Estimate the gradient of a nonlinear graph <p>Algebraic Fractions (H)</p> <ul style="list-style-type: none"> Simplify $+/-/x/\div$ algebraic fractions Solve equations arising from algebraic fractions <p>Iteration (H)</p> <ul style="list-style-type: none"> Find approximate solutions to equations using iteration <p>Equation of a Circle and Tangents (H)</p> <ul style="list-style-type: none"> Recognise and construct the graph of a circle Find the equation of the tangent to a circle at a given point 	Revision	Revision	Examinations

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	<p>Proof (AS)</p> <ul style="list-style-type: none"> Deduction Exhaustion Counter Example <p>Surds and Indices (AS)</p> <p>Recap and extend content from GCSE</p> <p>Quadratic Functions (AS)</p> <p>Recap contents from GCSE. Extend to include:</p> <ul style="list-style-type: none"> Finding and interpreting the Discriminant <p>Equations and Inequalities (AS)</p> <p>Recap and extend content from GCSE</p> <p>Coordinate Geometry (AS)</p> <p>Recap straight line and circle geometry from GCSE. Extend to include</p> <ul style="list-style-type: none"> Circles with centre (a,b) <p>Polynomials (AS)</p> <ul style="list-style-type: none"> Factor Theorem Algebraic Division 	<p>Trigonometry (AS)</p> <p>Recap trigonometry from GCSE. Extend to include:</p> <ul style="list-style-type: none"> Trigonometric graphs, symmetries, and periodicity Understand and use $\tan \theta = \frac{\sin \theta}{\cos \theta}$ $\sin^2 \theta + \cos^2 \theta = 1$ Solve simple trigonometric equations <p>Graphs and Graph Transformations (AS)</p> <ul style="list-style-type: none"> Understand and use graphs of functions Understand the effect of simple graph transformations <p>Differentiation (AS)</p> <ul style="list-style-type: none"> Gradient of a curve Differentiation from first principles Differentiation of x^n including expressions with 2 or more terms Gradients, tangents, normals and stationary points Increasing/decreasing functions 2nd order derivatives Modelling <p>Integration (AS)</p> <ul style="list-style-type: none"> Integration of x^n including expressions with 2 or more terms ($n \neq -1$) Evaluate definite integrals 	<p>Integration Continued (AS)</p> <ul style="list-style-type: none"> Find the area under a curve and between the curves and lines <p>Vectors (AS)</p> <ul style="list-style-type: none"> Representing Magnitude and direction Position vectors Geometric problems Modelling <p>Exponentials and Logarithms (AS)</p> <ul style="list-style-type: none"> Exponential functions Exponential modelling Laws of logarithms Equations Natural logarithms <p>Binomial Expansion (AS)</p> <ul style="list-style-type: none"> Pascal's triangle Factorial notation Binomial expansion for positive integer n <p>Kinematics (AS)</p> <ul style="list-style-type: none"> Quantities and units Understand and use the language of kinematics D-T graphs and V-T graphs Understand, derive, and use the SUVAT equations <p>Data Collection (AS)</p> <ul style="list-style-type: none"> Populations and samples Sampling techniques <p>Data Processing, Presentation, and Interpretation (AS)</p> <ul style="list-style-type: none"> Measure of central tendency Measure of spread Variance and standard deviation 	<p>Data Processing, Presentation, and Interpretation Continued (AS)</p> <ul style="list-style-type: none"> Outliers Box plots Cumulative frequency Histograms Comparing data Correlation Linear regression <p>Forces and Newton's Laws of Motion (AS)</p> <ul style="list-style-type: none"> Force diagrams Forces as vectors Forces and acceleration Motion in 2D Connected particles Pulleys <p>Variable Acceleration (AS)</p> <ul style="list-style-type: none"> Functions of time Using differentiation Maxima and minima problems Using integration <p>Probability (AS)</p> <ul style="list-style-type: none"> Calculating probabilities Venn diagrams Mutually exclusive and independent events Tree diagrams <p>The Binomial Distribution (AS)</p> <ul style="list-style-type: none"> Binomial distribution as a model Calculate probabilities using the binomial distribution <p>Statistical Hypothesis Testing (AS)</p> <ul style="list-style-type: none"> Understand and apply the language of statistical hypothesis testing Conduct a statistical hypothesis test 	<p>Sequences and Series (A2)</p> <ul style="list-style-type: none"> Arithmetic sequences and series Geometric sequences and series Sum to infinity Sigma notation Recurrence relations Modelling <p>Functions (A2)</p> <ul style="list-style-type: none"> Modulus function Functions and mappings Composite and inverse functions Transformations Solving modulus problems 	<p>Differentiation (A2)</p> <ul style="list-style-type: none"> Chain rule Product rule Quotient rule 2nd derivatives Points of inflection Rates of Change <p>Further Differentiation (A2)</p> <ul style="list-style-type: none"> Differentiating trigonometric functions, exponentials and logarithms <p>Trigonometry (A2)</p> <ul style="list-style-type: none"> Work with radians including arc length and area of a sector and segments Solving trigonometric equations Understand and use the small angle approximations for sin, cos and tan Exact values <p>Trigonometric Functions (A2)</p> <ul style="list-style-type: none"> Secant, cosecant and cotangent Inverse trigonometric functions

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Year 13	<p>Trigonometric Identities (A2)</p> <ul style="list-style-type: none"> Addition formula Double angle formula Trigonometric identities Solving trigonometric equations Proving trigonometric identities Modelling <p>Algebra (A2)</p> <ul style="list-style-type: none"> Algebraic fractions Partial fractions Repeated factors Algebraic division Binomial expansion with any rational n <p>Parametric Equations (A2)</p> <ul style="list-style-type: none"> Parametric equations Using trigonometric identities Curve sketching Points of intersection Modelling <p>Integration (A2)</p> <ul style="list-style-type: none"> Using trigonometric identities Reverse chain rule By substitution By parts Partial fractions Areas 	<p>Proof (A2)</p> <ul style="list-style-type: none"> Proof by contradicting <p>Differential Equations (A2)</p> <ul style="list-style-type: none"> Solving differential equations Modelling <p>Vectors (A2)</p> <ul style="list-style-type: none"> Vectors in 3D Geometric problems <p>Kinematics (A2)</p> <ul style="list-style-type: none"> Vectors in kinematics Variable acceleration Differentiating and integrating vectors <p>Projectiles (A2)</p> <ul style="list-style-type: none"> Horizontal and vertical components Projection at an angle Projectile motion formulae Vector methods with projectiles <p>Probability (A2)</p> <ul style="list-style-type: none"> Set notation Conditional probability formula Venn diagrams Tree diagrams Modelling <p>Probability Distributions (A2)</p> <ul style="list-style-type: none"> Normal distribution Finding probabilities with the normal distribution 	<p>Probability Distributions Continued (A2)</p> <ul style="list-style-type: none"> Approximating a binomial distribution Selecting appropriate probability distributions <p>Force and Motion (A2)</p> <ul style="list-style-type: none"> Resolving forces Static particles Modelling with statics Rigid bodies Dynamics and inclined planes Connected particles <p>Friction (A2)</p> <ul style="list-style-type: none"> Understand and use $F \leq \mu R$ Resolving forces Inclined planes Limiting friction 	<p>Hypothesis Testing (A2)</p> <ul style="list-style-type: none"> Correlation coefficients Critical values Hypothesis testing with the normal distribution <p>Numerical Methods (A2)</p> <ul style="list-style-type: none"> Locating roots Iteration Newton-Raphson Modelling Trapezium rule <p>Moments (A2)</p> <ul style="list-style-type: none"> Resultant moments Equilibrium Centre of mass Tilting 	<p>Revision</p>	<p>Examinations</p>