

AUTUMN 1

AUTUMN 2

SPRING 1

SPRING 2

SUMMER 1

SUMMER 2

All units include a review of KS2 knowledge and/or prior unit learning, teach how to use technology e.g. calculators and when to use it appropriately, and provide students opportunity to solve real-life or worded problems. A topic with a \* is a Challenge / Stretch topic.

**Settling In**

- Maths and its history

**Geometry basics**

- Geometry vocabulary and notation
- 2D shapes and their properties
- Regular vs irregular polygons
- Line and Angle facts
- Perimeter & Area of rectilinear shapes
- Perimeter & Area of non-rectilinear and/or compound shapes \*
- Parts of a circle \*

**Directed Numbers**

- Using inequality symbols
- Number lines
- Comparing and ordering directed numbers
- Calculations with directed numbers
- Problem-solving with directed numbers \*

**Algebra basics**

- Algebra vocabulary and notation
- Function machines
- Inverse operations
- Forming expressions
- Substitution
- Collecting like terms
- Equality & equivalence
- Fact families
- Simplifying expressions
- Solving one-step linear equations \*
- Formulae \*
- Solving two-step equations \*

**Place Value**

- Understand place value for positive / negative integers and/or decimals
- Multiplying & dividing by positive powers of 10
- Ordering positive / negative integers and/or decimals
- Multiplying & dividing by positive / negative powers of 10 \*
- Standard form \*

**Arithmetic including Order of Operations**

- Four operations and their common methods
- Multiplication tables and associated division facts
- Order of operations including directed numbers, decimals and/or algebraic expressions
- Inverse operations / Fact families
- Using the most appropriate method
- Midpoint of two numbers
- Sequences \*

**Powers & Roots**

- Square and cube numbers
- Multiplying & dividing by powers of 10
- Powers including power of 0
- Calculations with powers
- Calculations with roots
- Bounds of roots \*
- Standard form \*

**Multiples & Factors**

- Number types
- Prime numbers
- Multiples, common multiples and lowest common multiple (LCM)
- Factors, common factors and highest common factor (LCF – also known as GCD – Greatest common divisor)
- Multiples and factors of expressions \*
- Prime Factorisation including Venn diagrams \*

**Fractions**

- What is a fraction?
- Fractions and decimals
- Proper, improper fractions and mixed numbers
- Multiplying fractions
- Reciprocals
- Dividing fractions
- Adding fractions
- Subtracting fractions
- Fractions, mixed numbers and decimals \*
- Algebraic fractions \*

**Percentages**

- Fractions, decimals and percentages
- Percentage of an amount
- Decimal multipliers
- Percentage change
- Percentage increase / decrease
- Calculating the original value \*

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<p><b>Cartesian Grid</b></p> <ul style="list-style-type: none"> <li>Plotting 2D coordinates in all four quadrants</li> <li>Mid-point of a line segment / 2 coordinates</li> <li>Finding coordinates of polygon vertices*</li> <li>Divide a line into sections using coordinates *</li> </ul> <p><b>Algebra &amp; Graphs</b></p> <ul style="list-style-type: none"> <li>Recognise and/or linear graphs</li> <li>Tables of values</li> <li>Real-life graphs</li> <li>Linear graphs and their properties *</li> <li>Exploring the gradient of a line *</li> <li>Sketching graphs using its equation *</li> <li>Quadratic graphs *</li> </ul>	<p><b>Measures inc. Time</b></p> <ul style="list-style-type: none"> <li>Measures – using and converting metric units</li> <li>Measures – using and converting money units</li> <li>Time and the calendar</li> <li>Timetables</li> <li>Measure prefixes</li> <li>Measures of length</li> <li>Measures of mass</li> <li>Measures of capacity</li> <li>Reading scales</li> <li>Decimal time</li> <li>Convert between metric units of area or volume *</li> <li>Metric v Imperial *</li> </ul> <p><b>Perimeter, Area &amp; Volume</b></p> <ul style="list-style-type: none"> <li>Perimeter of polygons and compound shapes</li> <li>Area of rectangles, parallelograms, triangles, trapezia and compound shapes</li> <li>Volume of a cuboid</li> <li>Capacity of a cuboid*</li> <li>Volume of a prism *</li> <li>Surface area of a prism *</li> <li>Perimeter / Area problems involving algebra *</li> </ul>	<p><b>Simplifying Expressions</b></p> <ul style="list-style-type: none"> <li>Forming and solving expressions including directed numbers and decimals</li> <li>Substitution</li> <li>Solving equations with one step</li> <li>Equivalent expressions</li> <li>Factorisation</li> <li>Expanding double brackets</li> <li>Expressions involving powers *</li> <li>Expanding triple brackets *</li> <li>Solve equations involving two / three steps *</li> <li>Set up and solve equations for angles, perimeter, area or volume *</li> </ul>	<p><b>Ratio Basics</b></p> <ul style="list-style-type: none"> <li>Ratio notation</li> <li>Simplifying ratios</li> <li>Ratio and fractions</li> <li>Solving ratio problems in the form m:n</li> <li>Expressing ratios in the form 1:n or n:1</li> <li>Divide a value into a given ratio</li> <li>Find missing totals or quantities using ratio</li> <li>Unit conversion</li> <li>Fractions, decimals, percentages and ratio *</li> <li>Divide a ratio into 3 or more parts *</li> <li>Scale Factors *</li> <li>Gradient of a line as a ratio *</li> </ul> <p><b>Proportional Reasoning</b></p> <ul style="list-style-type: none"> <li>Direct proportion problems, e.g. best buys, value for money, recipes</li> <li>Ratio v Proportion</li> <li>Unitary method</li> <li>Conversion (linear) graphs</li> <li>Currencies - exchange rates</li> <li>Compound measures - speed</li> <li>Compound measures, e.g. density, pressure *</li> <li>Direct proportion graphs *</li> </ul>	<p><b>Fractions</b></p> <p>Consolidate and extend all fraction work from Year 7:</p> <ul style="list-style-type: none"> <li>What is a fraction?</li> <li>Fractions and decimals</li> <li>Proper, improper fractions and mixed numbers</li> <li>Multiplying fractions</li> <li>Reciprocals</li> <li>Dividing fractions</li> <li>Adding fractions</li> <li>Subtracting fractions</li> <li>Fractions, mixed numbers and decimals *</li> <li>Algebraic fractions *</li> </ul> <p><b>Prime Factorisation</b></p> <ul style="list-style-type: none"> <li>Prime factors</li> <li>Product of primes</li> <li>Use prime factors to find HCF / LCM *</li> <li>Use Venn diagrams to find HCF / LCM *</li> </ul>	<p><b>Angles, Shapes &amp; Solids</b></p> <ul style="list-style-type: none"> <li>Polygon properties</li> <li>Congruency</li> <li>Line symmetry</li> <li>Angle problems</li> <li>Rotational symmetry</li> <li>3D shapes</li> <li>Nets</li> <li>Surface area of cuboids *</li> <li>Interior angles of polygons *</li> <li>Exterior angles of polygons *</li> <li>Tesselation *</li> <li>Geometric constructions *</li> </ul> <p><b>Estimation</b></p> <ul style="list-style-type: none"> <li>Rounding to the nearest 10, 100, 1000, nearest whole number</li> <li>Rounding to decimal places and significant figures</li> <li>Estimation</li> <li>Rounding numbers appropriately *</li> <li>Standard form *</li> </ul>

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All units include a review of KS3 knowledge and/or prior unit learning, teach how to use technology e.g. calculators and when to use it appropriately, and provide students opportunity to solve real-life or worded problems. A topic with a (H) is a Higher tier only topic.

**Number**

- Standard Form
- Product rule for counting (H)

**Rounding, Estimation and Accuracy**

- Truncation
- Error intervals
- Upper and lower bounds (H)

**Factors, Multiples and Primes**

- Problems with HCF/LCM

**Fractions**

- Recurring decimals to fractions (H)

**Powers and Roots**

- Negative integer powers
- Unit fraction powers (H)

**Algebra**

- Index law problems which include use of zero, fractional and negative powers.

**Equations and Formulae**

- Solving equations with unknowns on both sides.
- Forming equations using angle facts, perimeter, area.

**3D Shapes and the 2D Representations**

- Planes of symmetry
- 2D isometric representations
- Plans and elevations

**Perimeter and Area**

- Surface area
- Problems involving algebra

**Sequences**

- N<sup>th</sup> Term
- Quadratic sequences

**Percentages Review**

- Compound interest (H)
- Reverse percentages (H)

**Proportion**

- Direct and inverse proportion problems
- Set up and use equations to solve proportion problems (H)

**Shape Properties and Angles**

- Multistep problems
- Problems involving algebra

**Angles in Parallel Lines**

- Understand and use the angle properties of parallel lines;
- Find missing angles using properties of corresponding, alternate and co-interior angles;

**Area and Circumference of a Circle**

- Length of an arc
- Area of a sector

**Compound Measures**

- Solve problems involving Speed, Density and Pressure formulae
- Plot and interpret Distance-Time and Velocity-Time graphs

**Pythagoras' Theorem**

- Understand and use Pythagoras' theorem
- Show that a triangle is right angled • Use Pythagoras' theorem in 3D (H)

**Transformations**

- Enlargement from a point
- Fractional scale factors
- Negative scale factors (H)
- Combinations

**Basic Probability**

- Theoretical probability
- Experimental probability
- Expectation
- Probabilities from frequency and two-way tables;
- Mutually exclusive events;

**Properties of Polygons**

- Interior and exterior angles
- Multistep problems
- Algebra

**Coordinates and Linear Graphs**

- Calculating gradients
- Graphs of the form  $ax + by = c$
- Equations of parallel lines
- Equations of perpendicular lines (H)

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<p><b>Quadratics</b></p> <ul style="list-style-type: none"> <li>Expand the product of two linear expressions</li> <li>Factorise expressions of the form <math>x^2 + bx + c</math></li> <li>Use the difference of two squares</li> <li>Factorise expressions of the form <math>ax^2 + bx + c</math> (H)</li> <li>Write expressions in completing the square form <math>(x + a)^2 + b</math> (H)</li> <li>Expand the product of more than two linear expressions (H)</li> </ul> <p><b>Scatter Graphs</b></p> <ul style="list-style-type: none"> <li>Draw scatter and interpret graphs</li> <li>Draw and use the line of best fit make predictions</li> <li>Interpolation and extrapolation</li> <li>Causality</li> </ul> <p><b>Collecting Data</b></p> <ul style="list-style-type: none"> <li>Frequency polygons</li> <li>Stem and Leaf diagrams</li> <li>Pie charts</li> <li>Comparing distributions using charts</li> <li>Time series graphs (H)</li> </ul> <p><b>Representing Data</b></p> <ul style="list-style-type: none"> <li>Frequency polygons</li> <li>Stem and Leaf diagrams</li> <li>Pie charts</li> <li>Comparing distributions using charts</li> <li>Time series graphs (H)</li> </ul>	<p><b>Summarising Data</b></p> <ul style="list-style-type: none"> <li>Compare distributions</li> <li>Calculate averages from charts</li> <li>Find the median, quartiles and interquartile range (H)</li> </ul> <p><b>Scale Drawing and Bearings</b></p> <ul style="list-style-type: none"> <li>Bearings</li> <li>Problems involving angle facts and bearings</li> </ul> <p><b>Congruence and Similarity</b></p> <ul style="list-style-type: none"> <li>Recognise congruent shapes</li> <li>Use congruence to find missing sides and angles</li> <li>Use similarity to find missing sides and angles</li> <li>Prove congruence and similarity (H)</li> <li>Use similarity to find missing lengths, areas and volumes (H)</li> </ul> <p><b>Trigonometry</b></p> <ul style="list-style-type: none"> <li>Understand the trigonometric ratios</li> <li>Work out missing sides and angles in right angled triangles</li> <li>Know and use exact values of key angles</li> <li>Use trigonometry in 3D shapes (H)</li> </ul>	<p><b>Percentages</b></p> <ul style="list-style-type: none"> <li>Compound interest</li> <li>Reverse percentages</li> </ul> <p><b>Growth and Decay</b></p> <p><b>Volume and Surface Area</b></p> <ul style="list-style-type: none"> <li>Cones</li> <li>Frustums</li> <li>Pyramids</li> <li>Spheres</li> </ul> <p><b>Circle Theorems (H)</b></p> <ul style="list-style-type: none"> <li>Use and apply circle theorems to find missing angles</li> <li>Prove circle theorems</li> </ul> <p><b>Surds (H)</b></p> <ul style="list-style-type: none"> <li>Simplify a surd</li> <li>Simplify expressions involving surds</li> <li>Rationalise the denominator</li> </ul> <p><b>Solving Quadratic Equations</b></p> <ul style="list-style-type: none"> <li>Solve equations of the form <math>x^2 + bx + c</math> by factorising</li> <li>Find approximate solutions graphically</li> <li>Solve equations of the form <math>ax^2 + bx + c</math> by factorising (H)</li> <li>Use completing the square (H)</li> <li>Use the quadratic formula (H)</li> </ul>	<p><b>Further Ratio</b></p> <ul style="list-style-type: none"> <li>Difference problems</li> <li>Combining ratios</li> <li>Ratio, percentage, and fraction problems</li> <li>Ratio as a linear function (H)</li> </ul> <p><b>Quadratic Graphs</b></p> <ul style="list-style-type: none"> <li>Lines of symmetry, roots, intercepts and turning points</li> <li>Sketching quadratic and cubic graphs (H)</li> </ul> <p><b>Inequalities</b></p> <ul style="list-style-type: none"> <li>Representing on a number line</li> <li>Solve linear inequalities</li> <li>Use set notation to represent solution (H)</li> <li>Represent inequalities graphically (H)</li> <li>Solve quadratic inequalities (H)</li> </ul>	<p><b>Simultaneous Equations</b></p> <ul style="list-style-type: none"> <li>Write equations to represent situations</li> <li>Solve linear by substitution, elimination and graphically</li> <li>Solve linear/quadratic (H)</li> </ul> <p><b>Probability Trees</b></p> <ul style="list-style-type: none"> <li>Complete and use probability trees for dependent and independent events</li> <li>Draw and use probability trees (H)</li> </ul> <p><b>Venn Diagrams</b></p> <ul style="list-style-type: none"> <li>Use Venn diagrams to represent real life situations and abstract sets</li> <li>Use Venn diagrams to calculate probabilities</li> <li>Understand and use set notation</li> </ul> <p><b>Histograms and Cumulative Frequency (H)</b></p> <ul style="list-style-type: none"> <li>Draw and interpret</li> <li>Histograms</li> <li>Cumulative frequency graphs</li> <li>Boxplots</li> </ul>	<p><b>Real Life Graphs</b></p> <ul style="list-style-type: none"> <li>Conversion graphs</li> <li>Fixed charge and cost per unit graphs</li> <li>Interpret gradient and intercept</li> </ul> <p><b>Loci and Constructions</b></p> <ul style="list-style-type: none"> <li>Standard ruler and compass constructions</li> <li>Solve loci problems using standard constructions</li> </ul> <p><b>Mocks and Intervention</b></p> <p><b>Work Experience</b></p>

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

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

	AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
	<p><b>Trigonometric Identities (A2)</b></p> <ul style="list-style-type: none"> <li>Addition formula</li> <li>Double angle formula</li> <li>Trigonometric identities</li> <li>Solving trigonometric equations</li> <li>Proving trigonometric identities</li> <li>Modelling <b>Algebra (A2)</b></li> <li>Algebraic fractions</li> <li>Partial fractions</li> <li>Repeated factors</li> <li>Algebraic division</li> <li>Binomial expansion with any rational <math>n</math></li> </ul> <p><b>Parametric Equations (A2)</b></p> <ul style="list-style-type: none"> <li>Parametric equations</li> <li>Using trigonometric identities</li> <li>Curve sketching</li> <li>Points of intersection</li> <li>Modelling</li> </ul> <p><b>Integration (A2)</b></p> <ul style="list-style-type: none"> <li>Using trigonometric identities</li> <li>Reverse chain rule</li> <li>By substitution</li> <li>By parts</li> <li>Partial fractions</li> <li>Areas</li> </ul>	<p><b>Proof (A2)</b></p> <ul style="list-style-type: none"> <li>Proof by contradicting</li> </ul> <p><b>Differential Equations (A2)</b></p> <ul style="list-style-type: none"> <li>Solving differential equations</li> <li>Modelling</li> </ul> <p><b>Vectors (A2)</b></p> <ul style="list-style-type: none"> <li>Vectors in 3D</li> <li>Geometric problems</li> </ul> <p><b>Kinematics (A2)</b></p> <ul style="list-style-type: none"> <li>Vectors in kinematics</li> <li>Variable acceleration</li> <li>Differentiating and integrating vectors</li> </ul> <p><b>Projectiles (A2)</b></p> <ul style="list-style-type: none"> <li>Horizontal and vertical components</li> <li>Projection at an angle</li> <li>Projectile motion formulae</li> <li>Vector methods with projectiles</li> </ul> <p><b>Probability (A2)</b></p> <ul style="list-style-type: none"> <li>Set notation</li> <li>Conditional probability formula</li> <li>Venn diagrams</li> <li>Tree diagrams</li> <li>Modelling</li> </ul> <p><b>Probability Distributions (A2)</b></p> <ul style="list-style-type: none"> <li>Normal distribution</li> <li>Finding probabilities with the normal distribution</li> </ul>	<p><b>Probability Distributions Continued (A2)</b></p> <ul style="list-style-type: none"> <li>Approximating a binomial distribution</li> <li>Selecting appropriate probability distributions</li> </ul> <p><b>Force and Motion (A2)</b></p> <ul style="list-style-type: none"> <li>Resolving forces</li> <li>Static particles</li> <li>Modelling with statics</li> <li>Rigid bodies</li> <li>Dynamics and inclined planes</li> <li>Connected particles</li> </ul> <p><b>Friction (A2)</b></p> <ul style="list-style-type: none"> <li>Understand and use <math>F \leq \mu R</math></li> <li>Resolving forces</li> <li>Inclined planes</li> <li>Limiting friction</li> </ul>	<p><b>Hypothesis Testing (A2)</b></p> <ul style="list-style-type: none"> <li>Correlation coefficients</li> <li>Critical values</li> <li>Hypothesis testing with the normal distribution</li> </ul> <p><b>Numerical Methods (A2)</b></p> <ul style="list-style-type: none"> <li>Locating roots</li> <li>Iteration</li> <li>Newton-Raphson</li> <li>Modelling</li> <li>Trapezium rule</li> </ul> <p><b>Moments (A2)</b></p> <ul style="list-style-type: none"> <li>Resultant moments</li> <li>Equilibrium</li> <li>Centre of mass</li> <li>Tilting</li> </ul>	<p><b>Revision</b></p>	<p><b>Examinations</b></p>