**HIGHER: Key Stage 4 Maths Curriculum**

**Long term plan Year 10 2024-2025**

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| **Autumn 1** |
| **Chapter 20 Combined Events** | **Chapter 9: Estimation and Approximation** |
| **Assessment**: Chapter A Test | **Assessment:** Chapter Test A |
| **Builds Upon:*** Arrange sets into Venn diagrams
* Describe sets using Venn diagrams (intersection, union and complement)
* Construct possibility (sample) space diagrams Calculate probabilities from sample space diagrams
* Use tree diagrams to show the frequency or probabilities of two events
* Use tree diagrams to calculate the probabilities of independent and dependent events
 | **Builds Upon:*** Round to appropriate degree of accuracy (10,100,1000s, dps, sfs)
* Use approximation to make estimates
* Check calculations using approximation and estimation
* Use common calculator functions
* Convert units of length, mass, volume, capacity, time and area
* Calculate the upper and lower bounds of rounded values
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| **Introduces:*** Use Venn diagrams to record outcomes and calculate probabilities of events
* Calculate estimated outcomes using probabilities
 | **Introduces:*** Estimate square roots
* Calculate compound units of speed and density
* Rearrange compound unit calculations to find missing values
* Use inequality notation to state error intervals and interpret limits of accuracy
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| **Autumn 2** |
| **Chapter 10: Equations and Inequalities** |
| **Assessment:** Chapter Test A |
| **Builds Upon**:* Solving two step equations (brackets, negatives)
* Solving equations involving fractions (and implied brackets)
* Solving equations with the unknown on both sides
* Forming and solving equations
* Solving by completing the square
* Solving by applying the quadratic formula
* Forming and solving quadratic equations
* Solving simultaneous equations graphically
* Solving simultaneous equations using elimination
* Solving equations using trial and improvement
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| **Introduces:** * Solving quadratics graphically for the roots (x intercepts)
* Solving quadratics with/without coeff of x^2 by factorising
* Solving simultaneous equations using substitution
* Solving simultaneous equations between a linear and quadratic
* Forming and solving simultaneous equations
* Using iteration formulae to find a solution to a given number of decimal places
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| **Spring 1** |
| **Chapter 11: Circles and Constructions** | **Chapter 13: Factors, powers and roots** |
| **Assessment:** Chapter Test A | **Assessment:** Chapter Test A |
| **Builds Upon**:* Circumference of circles
* Area of circles
* Circumference and area of composite shapes involving parts of circles
* Construct angle
* Construct line bisectors (of a line, from a point to a line, from a point on a line)
* Construct triangles
* Construct quadrilaterals,
* Construct an angle of 60 degrees
* Construct loci from points, lines, around shapes etc.
* Construct loci involving a change of radius or rolling shapes etc.
 | **Builds Upon:*** Know and use the language of prime numbers, factors and multiples
* Write a number as the product of its prime factors (prime decomposition)
* Construct a prime factor venn
* Identify HCF
* Identify LCM
* Find square and cube roots of numbers and apply law of indices
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| **Introduces:** * Arc length
* Area of sectors
* Perimeter and area of composite shapes involving sectors
* Circle Theorems
* Proof of circle theorems
 | **Introduces:*** Estimate the square or cube root of an integer
* Simplify expressions involving surds
* Rationalise fractions involving surds
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| **Spring 2** |
| **Chapter 12: Ratio and proportion** | **Chapter 14: Graphs 1** |
| **Assessment:** Chapter Test A | **Assessment:** Chapter Test A |
| **Builds Upon:*** Express proportions of an amounts as fractions or percentages
* Calculate percentage increases and decreases using multiplication
* Find the original value follow a percentage increases and decreases
* Simplify ratios
* Write ratios from worded questions
 | **Builds Upon:*** Equation of a straight line y=mx+c
* Calculating gradient
* Identifying y intercept
* Graphing linear equations
* Writing the equation for linear graphs
* Properties of parallel and perpendicular lines
* Writing the equations for parallel and perpendicular lines
* Equation of quadratic curves ax2+bx+c=y
* Graph quadratic equations
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| **Introduces:*** Share amounts into a ratio (ADAM)
* Use scale factors, scale diagrams and maps.
* Understand and calculate simple interest
 | **Introduces:*** Identifying x intercepts (roots) and y intercepts graphically and algebraically
* Identifying turning points graphically and algebraically
* Properties of quadratic functions
* Kinematic graphs (solving distance, speed and acceleration problems)
* Solving Inequalities
* Graphing Inequalities
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| **Summer 1** |
| **PPES** | **Chapter 15: Working in 3D** |
| **Assessment** 2x 90 minute PPEs | **Assessment:** Chapter Test A |
| **Builds Upon** * Describe exam strategies and explain MTGs/ grade boundaries and progress
* Apply exam strategies to Practice Paper 1 questions (Non Calculator)
* Apply set theory to venn diagrams (MG)
* Manipulate fractional and negatives indices (MG)
* Solve simultaneous equations
* Solve quadratic simultaneous equations
* Apply circle theorem to exam questions
* Solve ratio problems through combining ratios (MG Ratios 2)
 | **Builds Upon:*** Draw and interpret net diagrams
* Calculate surface area of 3D shapes
* Draw and interpret plans and elevation of 3D shapes
* Calculate volume of a right prism
* Calculate volume of a cylinder
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|  | **Introduces:** * Apply compound units to calculate mass (m=vd)
* Calculate the volume of frustums, spheres, hemispheres pyramids and cones
* Apply reasoning and problem solving
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| **Summer 2** |
| **Chapter 19: Pythagoras, Trigonometry and Vectors** | **Chapter 16: Handling Data 2** |
| **Assessment:** Chapter A Test | **Assessment:** Chapter Test A |
| **Builds Upon:*** Apply Pythagoras' theorem to find long sides
* Apply Pythagoras' theorem to find short sides
 | **Builds Upon:*** Calculate estimated mean,modal class and class interval of the median for grouped data
* Construct scatter graphs and describe correlation
* Make predictions based on the correlation (interpolation vs. extrapolation)
* Construct time series graphs
* Discuss any short term trends, seasonal variation and longer term trends
* Construct histograms
* Solve frequency density problems using histograms
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| **Introduces:*** Apply Pythagoras’ theorem to find distance between two points
* Apply trigonometric ratios (sin/cos/tan) to find missing sides in right angle triangles
* Apply trigonometric ratios (sin/cos/tan) to find missing angles in right angle triangles
* Know the exact values of sinØ and cosØ for Ø= 0, 30,45,60,90 degrees
* Know the exact value of tan Ø for Ø= 0,30,45,60 degrees
* Apply the sine rule to find missing lengths and angles
* Apply the cosine rule to find missing lengths and sides
* Apply sine formula for the area of non right angle triangles
* Solve 3D Pythagoras’ theorem and trigonometry problems
* Write column vectors and draw vector diagrams
* Add and subtract vectors
* Calculate multiples of vectors using a scalar
* Use vectors in geometric proofs
 | **Introduces:*** Construct and interpret box plots
* Construct and interpret cumulative frequency graphs

Compare spread using box plots |

**Year 11 2025-2026**

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| **Autumn 1** |
| **Chapter 17: Calculations 2** | **Chapter 18: Graphs 2** |
| **Assessment:** Chapter Test A | **Assessment:** Chapter Test A |
| **Builds Upon:**Convert in and out of index form* Solve calculations involving index laws (including roots, negatives, fractional indices)
* Convert in and out of standard form
* Solve calculations in standard form
 | **Builds Upon:*** Graphing linear and quadratics equations
* Sketching translations (including reflections, transformations etc.)
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| **Introduces:*** Simplify and manipulate surds
* Solve calculations involving factions, surds and pi
* Construction mapping diagrams for functions
* Write the inverse of a function f(x) 🡪 f —1(x)
* Write and solve composite functions
 | **Introduces:*** Recognise and plot graphs of cubic functions
* Recognise and plot graphs of reciprocal functions
* Recognise and sketch graphs of exponential functions
* Recognise and sketch trigonometric functions
* To recognise and sketch translation and reflections of graphs
* Draw and interpret non-standard graphs of real-life situations
* Gradients and areas under graphs
* Equation of a circle
* Find the tangent to a circle at a point
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| **Autumn 2** |
| **PPES** |  | **Chapter 21: Sequences** |
| **Assessment** 2x 90 minute PPES |  | **Assessment** Chapter A Test |
|  |  | **Builds Upon:*** Write sequence using term to term rule
* Write sequences using position to term rule (nth rule)
* Write the position to term rule (nth rule) for a linear sequence
* Recognise special types of sequence (square, cube, triangular, arithmetic, geometric, Fibonacci and quadratic)
* Find terms of quadratic sequence using term to term or position to term rule
* Write the position to term rule (nth rule) for a quadratic sequence
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|  |  | **Introduces:*** Applications to problem solving
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| **Spring 1** |
| **Chapter 22: Units and Proportionality** | **Chapter 20 Combined Events** |
| **Assessment:** Chapter A Test | **Assessment**: Chapter A Test |
| **Builds Upon:*** Calculations using standard and compound units (speed, density and pressure)
* Compare lengths, areas, and volumes of similar shapes
* Solve direct proportion problems
* Interpret the gradient of a straight line graph as a rate of change
* Solve inverse proportion problems
 | **Builds Upon:*** Arrange sets into Venn diagrams
* Describe sets using Venn diagrams (intersection, union and complement)
* Construct possibility (sample) space diagrams Calculate probabilities from sample space diagrams
* Use tree diagrams to show the frequency or probabilities of two events
* Use tree diagrams to calculate the probabilities of independent and dependent events
* Use Venn diagrams to record outcomes and calculate probabilities of events
* Calculate estimated outcomes using probabilities
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| **Introduces:*** Interpret graphs that illustrate direct and inverse proportion
* Set up, solve and interpret growth and decay problems
 | **Introduces:*** Application and problem solving
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| **Spring 2** |
| **PPES** | **23: Algebraic Proofs** |  |
| **Assessment** 2x 90minute PPES | **Assessment NA** |  |
|  | **Builds Upon*** Algebraic identities
* Constructing mathematical arguments
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|  | **Introduces*** Counter examples
* LHS/RHS proofs
* Odd/Even proofs
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| **Summer 1** |
| **GCSE EXAM REVISION** |
| **Assessment:****3 x 90 minute formal public exams** |
| **Builds Upon:**Content informed by QLAs and teacher led |
| **Introduces:** |

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| **Summer 2** |
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