**FOUNDATION: Key Stage 4 Maths Curriculum**

**Long Term Plan Year 10 2024-2025**

Year 10

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| **Autumn 1** | |
| **Chapter 8: Probability** | **Chapter 9: Estimation and Approximation** |
| **Assessment:** Chapter Test A | **Assessment:** Chapter Test A |
| **Builds Upon:**   * Understand the probability scale * Construct sample space diagrams List sample space of an experiment * Write experimental and theoretical probabilities as fractions | **Builds Upon:**   * Round to appropriate degree of accuracy (10,100,1000s, dps, sfs) * Use common calculator functions * Convert units of length, mass, volume, capacity, time and area |
| **Introduces:**   * Write experimental and theoretical probabilities as relative frequencies * Calculate expected frequencies * Compare theoretical probabilities with experimental probabilities * Recognise mutually exclusive events and exhaustive events * Understand that the probabilities of mutually exclusive exhaustive events sum to one * Compare bias and equally likely events | **Introduces:**   * Use approximation to make estimates * Check calculations using approximation and estimation * 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** | **Chapter 11: Circles and Constructions (started)** |
| **Assessment**  **Chapter Test A** | **Assessment**  **Chapter Test A** |
| **Builds Upon:**   * Solve one step equations (using function machines) * Solve one step equations (using balancing method) * Solve two step equations (without brackets) * Solve two step equations (with brackets) * Solve two step equations (including negatives and improper fractions as solutions) * Solve equations with variables on both sides * Changing the subject of a Formula * Form and solve equations from worded questions * Form and solve equations with the unknown on both sides | **Builds Upon:**   * Calculate the perimeter of basic shapes (rectangles and triangles) * Calculate the area of basic shapes (rectangles and triangles) * Calculate circumference of circles * Calculate area of circles * Calculate perimeter and area of composite shapes involving halves and quarters of circles * Construct and measure lines (using rulers) * Construct a circle (using a compass) |
| **Introduces**   * Solve equations by reading off graphs (provide graphs if unable to plot) * Solving quadratic equations by reading off graphs (provide graphs if unable to plot) * Factorise quadratics * Solving quadratics without coeff of x^2 by factorising * Solving quadratics with coeff of x^2 by factorising * Solve simultaneous equations (using elimination) * Solve simultaneous equations (using substitution) * Form and solve simultaneous equations * Represent inequalities on number lines * Solve inequalities and representing solutions on a number line | **Introduces:**   * Calculate arc length * Calculate area of sectors * Calculate perimeter and area of composite shapes involving sectors * Construct and measure angles (using protractors) * Construct a perpendicular line bisector * Construct a perpendicular at a point on a line * Construct a perpendicular to a line from a point * Construct an angle bisector * Construct a SAS triangle * Construct an ASA triangle * Construct a SSS triangle * Loci (from one point, two points (line), two lines) * Loci (a combination of one point, two points and two lines) |

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| **Spring 1** | |
| **Chapter 11: Circles and Constructions (continued)** | **Chapter 13: Factors, Powers and Roots** |
| **Assessment**  **Chapter Test A** | **Assessment**  **Chapter Test A** |
| **Builds Upon:**   * Calculate the perimeter of basic shapes (rectangles and triangles) * Calculate the area of basic shapes (rectangles and triangles) * Calculate circumference of circles * Calculate area of circles * Calculate perimeter and area of composite shapes involving halves and quarters of circles * Construct and measure lines (using rulers) * Construct a circle (using a compass) | **Builds Upon:**   * List primes * List multiplies * List factors * Identify primes, multiples and factors from a list * Identify HCF of two numbers * Identify LCM of two numbers * Solve worded LCM and HCF problems * Construct a prime factor tree (Prime factor decomposition) * Calculate positive integer powers and roots |
| **Introduces:**   * Calculate arc length * Calculate area of sectors * Calculate perimeter and area of composite shapes involving sectors * Construct and measure angles (using protractors) * Construct a perpendicular line bisector * Construct a perpendicular at a point on a line * Construct a perpendicular to a line from a point * Construct an angle bisector * Construct a SAS triangle * Construct an ASA triangle * Construct a SSS triangle * Loci (from one point, two points (line), two lines) * Loci (a combination of one point, two points and two lines) | **Introduces:**   * Identify HCF and LCM using product notation (Venn diagram method) |

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| **Spring 2** | |
| **Chapter 12: Ratio & Proportion** | **Chapter 14: Graphs 1** |
| **Assessment**  **Chapter Test A** | **Assessment**  **Chapter Test A** |
| **Builds Upon:**   * Write fractions * Convert fractions to decimals (using non calculator 10th, 100ths, 1000ths method) * Convert fractions to decimals (using calculator method) * Convert decimals to fractions (using non calculator 10th, 100ths, 1000ths method) * Convert basic fractions to percentage (using number line) Convert percentages to fractions (using out of 100) * Convert decimals to percentages (link to number line) Convert percentages to decimals (link to number line) * Ordering fractions, decimals and percentages * Calculate percentage of an amount (non calculator method) * Calculate percentage of an amount (calculator/multiplier method) * Reverse percentage (calculate fraction of an amount as a percentage) * Calculate percentage increases and decreases * Reverse percentage (calculate increase or decrease as a percentage) | **Builds Upon:**   * Name and plot basic coordinates |
| **Introduces:**   * Write proportions as ratios * Simplify proportion ratios * Share using ratios (ADAM) * Use ratio to solve proportion and scale factor problems * Reasoning and problem solving | **Introduces:**   * Substitute into y=mx+c to create a table of values * Plot tables of values to draw lines * Investigate and plot y=? and x=? lines * Investigate to observe the effect of positive and negative gradients Calculate gradient of lines (using rise ÷ run) * Investigate to observe the effect of changing c * Write linear equations from graphs * Write linear equations from worded problems * Interpret distance-time graphs * Construct distance-time graphs |

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| **Summer 1** | |
| **PPES** | **Chapter 15: Working in 3D** |
| **Assessment**  **2 x 90 min exams** | **Assessment**  **Chapter Test A** |
|  | **Builds Upon:**   * Identify the numbers of faces, edges and vertices of 3D shapes * Construct nets of 3D shapes * Identify nets of 3D shapes * Calculate volume of cuboids and prisms * Calculate volume of cylinders |
|  | **Introduces:**   * Construct and interpret plan, front and side elevations of 3D shapes * Solve problems to find missing lengths given volume * Calculate surface area of cuboids * Calculate surface area of prisms * Calculate surface area of spheres, pyramids, cones and composite shapes * Solve problems to find missing lengths given surface area |

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| **Summer 2** | |
| **Chapter 19: Pythagoras, Trigonometry and Vectors** | **Chapter 16: Handling Data 2** |
| **Assessment**  **Chapter Test A** | **Assessment**  **Chapter Test A** |
| **Builds Upon:**   * Apply the sum of angles rule in triangles | **Builds Upon**:   * Explain key data terms (discrete and continuous) * Interpret and construct group frequency/tally tables * Interpret and construct bar graphs for group discrete data |
| **Introduces**:   * Apply formulae for Pythagoras' theorem to find long sides Apply formulae for Pythagoras’ theorem to find short sides * Apply trigonometric ratios (sin/cos/tan) to find lengths * Apply trigonometric ratios (sin/cos/tan) to find angles * 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 * Write column vectors and draw vector diagrams * Add and subtract vectors * Calculate multiples of vectors using a scalar | **Introduces:**   * Interpret and construct histograms for group continuous data * Identify the estimated mean * Identify modal class * Identify the class interval in which the median lies * Use estimated mean, modal class, class interval and range to compare distributions * Construct scatter graphs * Describe scatter graph correlation * Draw lines of best fit on scatter graphs * Extrapolate predictions from scatter graphs using line of best fit * Interpret and construct line graphs for time series data * Calculate speed from distance-time graphs using gradient (contrast exact speed vs. average speed) * Calculate acceleration from distance-time graphs using speed) |

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**:   * Calculate basic roots and indices * Apply index laws (multiplying, dividing and powers of a power) * Convert large numbers in and out of standard form * Convert small numbers in and out of standard form | **Builds Upon:**   * Plot linear graphs using tables of values * Plot and interpret real-life graphs |
| **Introduces:**   * Solve more complex index problems * Calculate exact solutions with fractions (addition, multiplication and division) * Calculate exact solutions with multiples of π * Solve standard form calculations (multiplication and division) * Solve worded standard form problems | **Introduces:**   * Plot quadratic functions * Identify and interpret roots, intercepts and turning points of quadratic functions * Solve quadratic equation by finding approximate solutions using graphs * Recognise, sketch and interpret graphs cubic functions * Recognise, sketch and interpret graphs reciprocal functions |

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| **Autumn 2** | |
| **PPES** | **Chapter 21: Sequences** |
| **Assessment**  **2x 90 min exams** | **Assessment**  **Chapter Test A** |
|  | **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) |
|  | **Introduces:**   * Find terms of quadratic sequence using term to term or position to term rule |

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| **Spring 1** | |
| **Chapter 22: Units and Proportionality** | **Chapter 20: Combined events** |
| **Assessment**  **Chapter Test A** | **Assessment**  **Chapter Test A** |
| **Builds Upon:**   * Calculations using standard and compound units (speed, density and pressure) | **Builds Upon:**   * Arrange sets into Venn diagrams |
| **Introduces**:   * 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 * Interpret graphs that illustrate direct and inverse proportion * Set up, solve and interpret growth and decay problems   **:** | **Introduces:**   * Describe sets using Venn diagrams (intersection, union and complement) * Use Venn diagrams to record outcomes and calculate probabilities of events * 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 * Calculate estimated outcomes using probabilities |

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| **Spring 2** |
| **PPEs and GCSE EXAM REVISION** |
| **Assessment**  **2x 90min exams** |
| **Builds Upon:** |
| **Introduces:** |

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| **Summer 1** |
| **GCSE EXAM REVISION** |
| **Assessment:**  **3 x 90 min official public exams** |
| **Builds Upon:** |
| **Introduces:** |

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| **Summer 2** |
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