**FOUNDATION: Key Stage 4 Maths Curriculum**

**Long Term Plan Year 9 2024-2025**

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| **Autumn 1** |  |  |  |
| **Fractions and percentages** | **Probability** | **Standard form** | **Linear inequalities** |
| **Assessment 1 : Fractions and percentages unit assessment** |  |  | **Assessment 2 Probability standard form and inequalities** |
| **Builds Upon:**   * Finding equivalent fractions * Ordering fractions * Multiplying fractions * Finding percentages of amounts without a calculator * Finding percentages of amounts with a calculator | **Builds Upon:**   * Writing probabilities as fractions, decimals and percentages * Probabilities of mutually exclusive events * Finding fractions of amounts * Finding percentages of amounts | **Builds Upon:**   * Using standard form with positive indices * Using standard form with negative indices * Index rules with positive indices * Index rules with negative indices * Using a calculator | **Builds Upon:**   * Use of greater than less than symbols |
| **Introduces:**   * Convert between fractions, decimals and percentages * Ordering fractions, decimals and percentages * Find fractions of amounts without a calculator with reasoning and application * Find fractions of amounts with a calculator with reasoning and application * Find percentages of amounts without a calculator with reasoning and application * Find percentages of amounts with a calculator with reasoning and application * Calculate percentage change (without a calculator) with reasoning and application * Calculate percentage change (with a calculator) with reasoning and application * Find original values in percentage calculations (AKA: calculate reverse percentages) * Find the percentage an amount has been changed by * Solve simple interest calculations | **Introduces:**   * Calculate experimental probabilities * Calculate expected results from repeated experiments * Construct and interpret frequency trees | **Introduces**   * Multiply and divide numbers in standard form * Add and subtract numbers in standard form * Standard form with a calculator | **Introduces**   * Reading and drawing inequalities on number lines * Solving single inequalities * Solve inequalities with the unknown on both sides * Solve double inequalities * Construct and Solve inequalities |

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| **Autumn 2** | |
| **Quadratic equations and formulae** | **Constructions and Circles** |
| **Assessment 3 Quadratic equations and formulae assessment** | **Assessment 4 Autumn Topics Assessment Part 1** |
| **Builds Upon:**   * Factorising into one bracket * Solving equations with two or more steps * Solving equations with the variable on both sides * Solving equations with the variable in the denominator | **Builds upon:**   * Using a ruler * Identifying parts of circles * Finding the circumference of circles * Finding the area of circles * Finding the surface area of prisms * Finding the volume of prisms * Using a calculator |
| **Introduces:**   * Expanding double brackets * Recognising Quadratic expressions * Factorise quadratic equations of the form x^2+bx+c * Factorise the difference of two squares * Factorise to solve quadratic equations of the form x^2+bx+c=0 * Factorise to solve quadratic equations of the form x^2+bx+c=0 * Change the subjects of formulae with one step * Change the subjects of formulae with two or more steps * Change the subjects of formulae with two or more steps | **Introduces :**   * Construct bisectors of angles * Construct perpendicular bisectors and lines * Find the arc length of sectors * Find the area of sectors * Find the surface area of cylinders * Find the volume of cylinders * Whole term revision lesson |

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| **Spring 1** |
| **Chapter 6: Formulae & Functions** |
| **Assessment 5:**  Term 1 Assessment Part 2  **Assessment 6 :** Chapter 6 Formulae and functions Test A |
| **Builds Upon:**   * Write formulae from sentences * Substitute to solve (positive and negative numbers) * Use standard formulae (e.g. kinematics) * Simplify expressions * Expand single brackets |
| **Introduces:**   * Change the subject of formulae * Identify expressions, equations, inequalities, formulae and identities * Expand double brackets * Factorise quadratic expressions * Complete the difference of two squares * Distinguishing between, and factorise : x2 - 4 and x2 - 4x |

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| **Spring 2** |
| **Chapter 3: Angles and Polygons** |
| **Assessment 7:** Chapter 3 Angles  **Assessment 8 :** Chapter 3 Angles and Polygons Test A |
| **Builds Upon:**   * Measure and describe angles as acute, right, obtuse or reflex |
| **Introduces:**   * Describe and apply the properties of angles around a point (sum of 360 degrees) * Calculate bearings based on angles around a point * Describe and apply the properties of angles on a straight line (sum of 180 degrees) * Derive and apply the sum of angles in triangles and quadrilaterals * Apply knowledge of special triangles to derive angles * Describe and apply the equivalence of vertically opposite angles * Identify and apply the properties of angles in parallel lines (alternate, corresponding and co-interior rules) * Solve problems involving all of the above (providing reasons) * Identify similarity between shapes * Calculate and apply scale factors * Identify and describe types of congruence (SSS, SAS, ASA, RHS) * Apply similarity and congruence to problem solve * Calculate and apply scale factors for area and volume from the linear scale factor * Calculate interior angles in polygons (using angles in a triangle) * Deduce and apply the sum of interior angles of any polygon and use (n-2)\*180 * Calculate exterior angles in polygons * Solve problems involving angles in polygons |

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| **Summer 1** |
| **Chapter 7: Working in 2D** |
| **Assessment 9:** Key Assessment  Assessment 10 : Chapter 4 Handing data Test A |
| **Builds Upon:**   * Accurately measure and draw line segments and angles * Bearings on a map * Area of quadrilaterals (squares, rectangles, parallelograms, trapezium) and triangles * Area of compound 2D shapes |
| **Introduces:**   * Apply scale to drawings -find distances on a map and in real life * Sketching lines such as y = -2, y = x etc. * Completing transformations:   + Translation   + Reflections   + Rotations from origin and a point   + Enlargements (greater than 1 & between 0 and 1)   + Enlargements from a point   + Combinations of Transformations * Describing transformations |

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| **Summer 2** | |
| **Chapter 4: Handling Data 1** | **Chapter 5: Fractions, Decimals and Percentages** |
| **Assessment:** Chapter 4 Handing data 1 Test A | **Assessment:** Chapter 5 Fractions Decimals and Percentages Test A |
| **Builds Upon:**   * Represent data in tally tables * Understand the link between tally and frequency tables * Read and interpret tally tables to solve problems * Construct and interpret pictograms * Construct and interpret bar charts * Calculate the mean, mode and median of listed data | **Builds Upon:**   * Name and construct fraction diagrams * Convert between improper fractions and mixed numbers * Identify and create equivalent fractions * Simplifying fractions * Write fractions as decimals * Order fractions and mixed numbers * Calculate fractions of amounts * Calculating percentages of amounts * Multiplying fractions, including simplifying (cancelling common factors) * Multiplying fractions and mixed numbers * Dividing fractions and mixed numbers * Adding and subtracting fractions with the same denominator * Adding and subtracting fractions with different denominators * Adding and subtracting mixed numbers * Solve worded fraction problems * Write percentages as fractions and decimals * Converting between fractions, decimals and percentages * Compare using < or > and order fractions, decimals and percentages |
| **Introduces:**   * Represent data in two-way tables Interpret two way tables to solve problems * Construct and interpret pie charts * Calculate the mean, mode and median of data in a frequency table * Calculate the range of data in lists and frequency tables * Understand the advantages and disadvantages of different averages * Identify outliers and explain their effect on averages/ranges * Compare distributions using averages and range | **Introduces:**   * Convert recurring decimals to fractions * Solving complex worded problems with a mixture of fractions, decimals and percentages |

Year 10 2025-2026

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| **Autumn 1** |
| **Chapter 9: Estimation and Approximation** |
| **Assessment:** Chapter Test A |
| **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:**   * 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 2026-2027

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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 20: Combined events** |
| **Assessment**  **2x 90 min exams** | **Assessment**  **Chapter Test A** |
|  | **Builds Upon:**   * Arrange sets into Venn diagrams |
|  | **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 1** | |
| **Chapter 22: Units and Proportionality** | **Chapter 21: Sequences** |
| **Assessment**  **Chapter Test A** | **Assessment**  **Chapter Test A** |
| **Builds Upon:**   * Calculations using standard and compound units (speed, density and pressure) | **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**:   * 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:**   * Find terms of quadratic sequence using term to term or position to term rule |

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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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