**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 diagramsList 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
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| **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
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|  **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 gradientsCalculate 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
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| **Introduces**:* Apply formulae for Pythagoras' theorem to find long sidesApply 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)
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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)
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|  | **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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