**HIGHER: 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
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| **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
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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
* Simplify algebraic fractions
 |
| **Introduces:*** Change the subject of formulae
* Construction mapping diagrams for functions
* Write the inverse of a function f(x) 🡪 f —1(x)
* Write and solve composite functions
* Identify expressions, equations, inequalities, formulae and identities
* Prove identities and find missing valuesProve statements to be true or false
* Expand double brackets
* Factorise quadratic expressions
* Distinguishing between, and factorise : x2 - 4 and x2 - 4x
* Complete the difference of two squares
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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
* Describe and apply the properties of angles around a point (sum of 360 degrees)
* 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
* 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
 |
| **Introduces:*** Calculate bearings based on angles around a point
* 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)
* Apply knowledge of special triangles to derive angles
* 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 exterior angles in polygons
* Solve problems involving angles in polygons
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| **Summer 1** |
| **Chapter 7: Working in 2D** |
| **Assessment 9:** Key AssessmentAssessment 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/trapeziums) 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:
	+ Translations
	+ Reflections
	+ Rotations from origin and a point
	+ Enlargements (scale factor greater than 1, between 0 and 1, & negative)
	+ Enlargements from a point
	+ Combinations of Transformations
* Describing transformations
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| **Summer 2** |
| **Chapter 4: Handing 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:*** Construct and interpreting bar charts
* Construct and interpret two way tables
* 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:** * Construct and interpret pie charts
* Calculate the mean, mode and median of data in a frequency table
* Understand the advantages and disadvantages of different averages
* Calculate the range and interquartile range
* Identify outliers and explain their effect on averages/ranges
* Compare distributions using averages and rangeConstruct frequency tables for grouped data
* Construct and interpret Histograms with equal widths
* Construct and interpret Histograms with unequal class widths
* Calculate frequency density
 | **Introduces:*** Convert recurring decimals to fractions
* Solving complex worded problems with a mixture of fractions, decimals and percentages
* Solving algebraic fractions
* Simplifying algebraic fractions using factorisation of single and double brackets
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**Long term plan 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 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:*** 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
 |
| **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
 |
| **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
 |
| **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 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:**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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| **Autumn2** |
| **PPES** | **Chapter 20 Combined Events** |
| **Assessment** 2x 90 minute PPES | **Assessment**: Chapter A Test |
|  | **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:*** Application and problem solving
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| **Spring 1** |
| **Chapter 22: Units and Proportionality** | **Chapter 21: Sequences** |
| **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:*** 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:*** Interpret graphs that illustrate direct and inverse proportion
* Set up, solve and interpret growth and decay problems
 | **Introduces:*** Applications to 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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