

Long Term Plan

Maths

KS4 (Year 10 and Year 11)

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Subject intent/vision:

In maths we provide a knowledge rich and an ambitious curriculum that allows our students to thrive academically.

We provide our students with reasoning, critical thinking and problem-solving opportunities that help them to flourish personally in and beyond the classroom.

To enable all students to achieve, our subject curriculum is underpinned by the following principles:



Ambitious – all students will study a three year KS3 curriculum that interlinks with our KS4 maths curriculum. This will enable all students to sit the GCSE exam in maths at the end of year 11 - some students will do the further maths exams in year 10. Top set students will sit the Statistics exam in year 11.



Sequenced / Spiral – all of our lessons begin with a Do Now activity that recaps prior learning and supports retrieval so that students know and remember more. Some topics are retaught throughout the five years so that knowledge can be built and sequenced over time. All of the units have work that is interleaved allowing students to apply their procedural knowledge and recap key facts. We have a centralised homework system which is bespoke to individual learners. The purpose of our homework is for our students to recall and retrieve prior learning. We do this by ensuring our homework lags with the class learning.



Literacy – In all Maths lessons we explicitly teach tier 2/3 vocabulary with our students, and we carry out a choral practice. Teachers also define the word and illustrate examples, non-examples and characteristics to ensure our students understand and can relate to abstract ideas.



Cultural Capital – our students have the opportunity to learn about profit and loss, repayments, growth, turning points (stability), perimeter, area, volume, sequences and much more. Students have the opportunity to take part in maths challenges and apply their learning in real life situations.

Long term plan:

From September 2025: KS4 Maths Programme of Study (Year 10 Higher)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Perimeter, Area, Surface Area and Volume: • Conversion between Metric Units • Area of Rectangles and Triangles • Area of Trapezium • Area of Parallelograms • Perimeter of Polygons • Area and Perimeter of Circles • Area and Perimeter of Sectors • Plans and Elevations • Surface Area of Cubes and Cuboids • Volume of Cubes and Cuboids Angles and Polygons: • Acute, Obtuse, Reflex and Right-Angle • Angles in Triangles and Straight Lines • Angles in Quadrilaterals • Angles in Parallel Lines • Angles in Polygons • Angles in Regular Polygons	Compound Measures: • Calculating Speed • Reading D-T Graphs • Acceleration • Density • Pressure • Area Under S-T graph • Rate of Change Algebra 2: • Expanding Single Brackets • Expanding and Simplifying Double Brackets • Expanding and Simplifying Triple Brackets • Factorise Algebraic Expressions • Factorise Quadratics Expressions • Factorise Quadratics using the AC method • Factorise using the Difference of Two Squares Sectors and Arc Lengths: • Area of Circles • Circumference • Area of Sectors • Arc Length • Area of Segments	Construction and Loci: • Drawing Triangles using SSS. • Congruent Triangles • Perpendicular Bisector • Constructing 30, 45, 60 and 90 Degrees • Drawing Loci Equations: • Solving 1 and 2 Steps linear Equations • Solving Quadratic Equations by Factorisation • Solving Quadratics by Factorisation by AC method • Solving Quadratics Using the Quadratic Formula • Solving Quadratics using the Completing the Square • Solving Linear Inequality • Solving Quadratic Inequality • Simultaneous Equations - Elimination • Simultaneous Equations by Substitution • Quadratic Simultaneous Equations • Solving Simultaneous Equations by Drawing Graphs • Iterations	Graphs: • Draw Linear Graphs • Find Equations of Parallel Lines • Find Equations of Perpendicular Lines • Sketching Quadratic Graphs • Find Roots and Turning Points • Drawing Cubic Graphs • Drawing Reciprocal Graphs Transformations of Graphs: • Translations • Reflection on horizontal and vertical lines • Reflection on a diagonal line • Positive Enlargements • Negative Enlargements • Rotation Right-Angled Triangles: • Pythagoras' Theorem – Calculating Hypotenuse • Pythagoras' Theorem – Calculating Shorter Sides	Right-Angled Triangles: • Trigonometry - SOHCAHTOA to find missing sides • Trigonometry - SOHCAHTOA to find missing angles • Trigonometry - Exact Values • 3D-Pythagoras' Theorem and Trigonometry Volume and Surface Area 2: • Surface Area of Cubes and Cuboids • Volume of Cubes and Cuboids • Volume of Prisms • Volume Cylinders, Pyramids, Cones, Spheres and Frustums • Surface Area of Cylinders and Spheres • Volume of Frustums Congruency and Similarity: • Congruency • Similar Shapes (Lengths, Areas and Volumes)	Proportion: • Sharing an Amount in Ratios • Three Parts Ratio • Proportion Ingredients • Best Buys • Exchange Rates • Direct Proportion • Inverse Proportion • Equating Ratios Probability: • Mutually Exclusive Events • Sample Space Diagrams • Product Rule of Counting • Conditional Probability (Two-Way Tables) • Conditional Probability (Venn Diagrams) • Conditional Probability (Tree Diagrams) • Probability Equations
Assessment: 2 Formative Assessments	Assessment: 1 Summative Assessment 1 Formative Assessment	Assessment: 1 Summative Assessment 2 Formative Assessments	Assessment: 2 Formative Assessments	Assessment: 1 Formative Assessment	Assessment: 1 Summative Assessment 3 Formative Assessments

From September 2025: KS4 Maths Programme of Study (Year 10 Foundation)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Sequences and Linear Graphs: - Describing Patterns - Linear Sequences - Function Machines and Coordinates - Drawing Linear Graphs ($Y = mx + c$) - To find gradient and y-intercept from linear equations) - Real life conversion graphs Fractions and Percentages: - Fractions - Equivalent Fractions - Ordering fractions - Improper Fractions - Mixed Numbers - Fractions of Amounts - Convert Fractions to Percentages - Percentage of Amounts - Percentage Change - Simple Interest - Compound Interest Averages and Range: - Finding Mode, Mean, Mode and Range from a Frequency Table and Stem & Leaf Diagram	Averages and Range: - Finding Mode, Median and Mean from a Grouped Frequency Table - Reverse Mean - Frequency Polygon Perimeter, Area, Surface Area and Volume: - Conversion between Metric Units - Area of Rectangles and Triangles - Area of Trapezium - Area of Parallelograms - Perimeter of Polygons - Area and Perimeter of Circles - Area and Perimeter of Sectors - Plans and Elevations - Volume of Cubes and Cuboids Transformations of Shapes: - Translations - Reflection on horizontal and vertical lines - Reflection on a diagonal line	Transformations of Shapes: - Positive Enlargements - Negative Enlargements - Rotation - Combined Transformation of Shapes Ratio and Proportion: - Simplify Ratios - Sharing an Amount in Ratios - Three Parts Ratio - Proportion Ingredients - Conversion Graphs - Best Buys - Exchange Rates - Direct Proportions - Inverse Proportions	Right-Angled Triangles: - Pythagoras' Theorem - Calculating Hypotenuse - Pythagoras' Theorem - Calculating Shorter Sides - Trigonometry - SOHCAHTOA to find missing sides - Trigonometry - SOHCAHTOA to find missing angles - Trigonometry - Exact Values Compound Measures: - Calculating Speed - Reading D-T Graphs - Acceleration - Density - Pressure Probability: - Probability Scale and Language - Sample Space Diagram - Venn Diagram - Tree Diagram	Bearings and Angles: - Right-Angled and Angles in Triangles - Angles at a Point - Angles on a Straight Line - Angles in Parallel Lines - Bearings - Scale Drawings Quadratics: - Sketching Quadratic Graphs - Expanding Double Brackets - Factorising Quadratics where $a = 1$ - Factorising Quadratics using the AC method - Difference of Two Squares - Solving Quadratics by Factorisation - Solving Quadratics Using the Quadratic Formula Surds: - Multiply and Divide Surds - Collecting Surds Circles: - Area and Circumference of Circles	Circles: - Area and Perimeter of Sectors - Arc Lengths Indices: - Multiplying and Dividing Laws - Power Laws - Reciprocal Laws - Fractional and Negative Laws Pyramids, Cylinders, Cones and Spheres: - Surface Area of Cubes and Cuboids - Volume of Cubes and Cuboids - Volume of Prisms - Volume Cylinders, Pyramids, Cones, Spheres and Frustums - Surface Area of Cylinders and Spheres Standard Form: - Ordinary Numbers and Standard Form - Multiply and Divide in Standard Form
Assessment: 2 Formative Assessments	Assessment: 1 Summative Assessment 2 Formative Assessments	Assessment: 1 Summative Assessment 2 Formative Assessments	Assessment: 1 Formative Assessment	Assessment: 3 Formative Assessments	Assessment: 1 Summative Assessment 2 Formative Assessments

From September 2025: KS4 Maths Programme of Study (Year 11 Higher)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Transformations of Shapes: • Positive Enlargements • Negative Enlargements • Rotation • Combined Transformation of Shapes Right-Angled Triangles: • Pythagoras' Theorem - Calculating Hypotenuse • Pythagoras' Theorem - Calculating Shorter Sides • Trigonometry - SOHCAHTOA to find missing sides • Trigonometry - SOHCAHTOA to find missing angles • Trigonometry - Exact Values Non-Right-Angled Triangles: • Sine Rule (Finding Lengths) • Sine Rule (Finding Angles) • Cosine Rule (Finding Lengths) • Cosine Rule (Finding Angles) • Area of Non-Right Angled Triangles • Trigonometric Graphs Volume and Surface Area 2: • Surface Area of Cubes and Cuboids • Volume of Cubes and Cuboids	Volume and Surface Area 2: • Volume of Prisms • Volume Cylinders, Pyramids, Cones, Spheres and Frustums • Surface Area of Cylinders and Spheres • Volume of Frustums Congruency and Similarity: • Congruency • Similar Shapes (Lengths, Areas and Volumes) Proportion: • Sharing an Amount in Ratios • Three Parts Ratio • Proportion Ingredients • Best Buys • Exchange Rates • Direct Proportion • Inverse Proportion • Equating Ratios Probability: • Mutually Exclusive Events • Sample Space Diagrams • Product Rule of Counting • Conditional Probability (Two-Way Tables) • Conditional Probability (Venn Diagrams) • Conditional Probability (Tree Diagrams) • Probability Equations	Transformation of Functions: • Functions • Composite Functions • Inverse Functions • Transformation of Graphs Algebraic Fractions and Proofs: • Simplify Algebraic Fractions • Adding and subtracting Algebraic Fractions • Multiplying and Dividing Fractions • Solving Algebraic Fractions • Algebraic Proofs • Geometric Sequence Vectors: • Column Vectors • Vectors and Ratios • Vector Proofs Curves and Tangents: • Equations of Circles • Equations of Tangents	Revision	Revision	Revision
Assessment: 1 Summative Assessment 3 Formative Assessments	Assessment: 1 Summative Assessment 2 Formative Assessments	Assessment: 2 Formative Assessments	Assessment: 1 Summative Assessment		

From September 2025: KS4 Maths Programme of Study (Year 11 Foundation)

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Compound Measures: - Percentage Change - Density - Speed - Pressure Probability: - Probability Language and Scale - Sample Space Diagrams - Venn Diagrams - Tree Diagrams Bearings and Angles: - Right-Angled and Angles in Triangles - Angles at a Point - Angles on a Straight Line - Angles in Parallel Lines - Bearings - Scale Drawings Quadratics: - Sketching Quadratic Graphs - Expanding Double Brackets - Factorising Quadratics where $a = 1$	Quadratics: - Factorising Quadratics using the AC method - Difference of Two Squares - Solving Quadratics by Factorisation Surds: - Multiply and Divide Surds - Collecting Surds Circles: - Area and Circumference of Circles - Area and Perimeter of Sectors - Arc Lengths Indices: - Multiplying and Dividing Laws - Power Laws - Reciprocal Laws - Fractional and Negative Laws Pyramids, Cylinders, Cones and Spheres: - Surface Area of Cubes and Cuboids - Volume of Cubes and Cuboids - Volume of Prisms - Volume Cylinders, Pyramids, Cones, Spheres and Frustums - Surface Area of Cylinders and Spheres	Standard Form: - Ordinary Numbers and Standard Form - Multiply and Divide in Standard Form Congruency and Similarity: - Congruency - Similar Shapes (Lengths and Areas) Further Graphs: - Linear Graphs - Quadratic Graphs - Cubic Graphs - Reciprocal Graphs Simultaneous Equations: - Simultaneous Equations - Simultaneous Equations - Worded Problems - Simultaneous Equations - Graphs Vectors: - Column Vectors - Adding and Subtracting Vectors - Vector Addition in Triangles and Polygon	Revision	Revision	Revision
Assessment: 1 Summative Assessment 2 Formative Assessments	Assessment: 1 Summative Assessment 3 Formative Assessments	Assessment: 3 Formative Assessments	Assessment: 1 Summative Assessment		

GCSE Exam:

The Pearson Edexcel Level 1/Level 2 GCSE (9 to 1) in Mathematics is a tiered qualification. There are two tiers:

- Foundation tier - grades 1 to 5 available
- Higher tier grades - 4 to 9 available (grade 3 allowed)

The assessment for each tier of entry consists of three externally examined papers, all three must be from the same tier of entry. Students must complete all three papers in the same assessment series.

Learning Resources:

Maths genie - <https://www.mathsgenie.co.uk/gcse.html>

CorbettMaths - <https://corbettmaths.com/contents/>

Maths4everyone - <https://www.maths4everyone.com/pages/worksheets.php>

MyMathsCloud - <https://www.mymathscloud.com/modules/gcse-igcse-o-level/practice-papers>