

# MATHS Curriculum Overview Foundation

|                          |  |  |  |   |   |   |
|--------------------------|--|--|--|---|---|---|
| Links to KS2             | Topics taught in Year 7 follow on directly from the KS2 National Curriculum content for Maths. Topics cover the "Foundation learners" content as laid out by the OCR specification. Students complete the OCR baseline test on entry to assess grasp of KS2 Mathematical skills and are then set according to this alongside SATs results  |  |  |   |   |   |
|                          | Intent   | A creative and ambitious curriculum, rich in knowledge and skills, designed to ignite curiosity and prepare students for everyday life, and future employment. Through this curriculum, students will have the opportunity to:<br>Become fluent in fundamental mathematics, and solve increasingly complex problems over time.<br>Reason mathematically, by following a logical line of thinking, conjecturing, pattern spotting and generalising.<br>Problem solve through mathematical thinking.<br>Communicate mathematically, justifying their thinking and proving their conjectures. |  |   |   |   |
| Timeline                 | 7-8 weeks  | 7-8 weeks  | 7-8 weeks  | 7-8 weeks   | 7-8 weeks   |   |
| SOW                      | Unit 1 - Number  | Unit 2 - Algebra   | Unit 3 - Shape   | Unit 4 - Fraction, Percentages and Decimals   | Unit 5 - Probability and Data   |   |
|                          | Unit Focus   | Place value<br>Multiply and divide by powers of ten<br>Four operations with integers<br>Four operations with decimals<br>Rounding<br>Type of number<br>HCF, LCM<br>Negative numbers<br>Order decimals<br>Order of operations<br>Using a calculator<br><u>Squares, cubes and roots</u>  | Language of algebra (notation)<br>Substitution<br>Simplifying expressions<br>Expanding single brackets<br>Forming expressions<br>Sequences   | Shape terminology (2D)<br>Perimeter<br>Circumference<br>Draw, measure, and name angles<br>Find unknown angles<br>Finding angles in parallel lines<br>Properties of triangles and quadrilaterals<br>Using a compass (constructing triangles)<br>Line and rotational symmetry   | Equivalent fractions<br>Compare and order FDP<br>Add, subtract, multiply, divide fractions<br>Mixed to improper and vice versa<br>Fraction of an amount<br>Percentage of a quantity<br>Percentage increase and decrease | Pie charts<br>Tally charts<br>Bar charts<br>List outcomes<br>Find theoretical probability<br>Find relative frequency and calculated expected outcomes from this |
| Timeline                 | 7 weeks  | 7 weeks  | 7 weeks  | 7 weeks   | 7 weeks   |   |
| SOW                      | Ratio  | Shape  | Number and data  | Algebra   | Shape   |   |
|                          | Unit Focus   | Convert between metric units of measure, using scale diagrams and maps, direct proportion, inverse proportion, understanding ratio, ratio calculations   | Time and timetables, speed, area, 3D shapes, surface area, coordinates   | Rounding to significant figures, measures of central tendency and spread, frequent tables, scatter diagrams, properties of number, inequalities,  | Basic function machines, solving linear equations, expanding brackets, solving linear inequalities, rules of indices, plot linear graphs  | Volume, forming equations with area and perimeter, forming and solving equations with angle facts, rotation, reflection, translation, enlargement               |
| Timeline                 | 9-10 weeks   | 9-10 weeks   | 9-10 weeks   | 9-10 weeks  |   |   |
| SOW                      | Number 1   | Shape 1  | Algebra 1  | Data 1  |   |   |
|                          | Unit Focus   | Non-calculator arithmetic<br>Using a calc<br>Negative numbers<br>BIDMAS<br>Rounding and Estimation<br>Estimation<br>Percentages<br>Growth and Decay<br>Standard form   | Properties of shape<br>Symmetry<br>Area and perimeter, including arcs and sectors of circles<br>Circle words<br>2D coordinates<br>Plans and elevations<br>Construction and loci<br>Real life graphs<br>Timetable and mileage charts<br>Gradients | Inverse operations<br>Substitution<br>Simplifying expressions<br>Expand and factorise single brackets<br>Expand double brackets<br>Solving equations<br>Sequences – linear and quadratic (generate only, not nth term for quadratic)<br>Linear graphs – and Gradients<br>Quadratic/cubic/reciprocal graphs<br>Approximate solutions using a graph | Frequency Diagrams<br>Pie Charts<br>Two Way Tables<br>Averages<br>Mean from Grouped Data<br>Comparing two data sets<br>Scatter Diagrams   |   |
| Timeline                 | 9-10 weeks   | 9-10 weeks   | 9-10 weeks   | 9-10 weeks  |   |   |
| SOW                      | Number 2   | Shape 2  | Algebra 2  | Reteach   |   |   |
|                          | Unit Focus   | 4 rules with fractions<br>4 rules with decimals<br>HCF/LCM<br>FDP conversions<br>Ratio<br>Proportionality<br>Indices   | Angles in parallel lines and polygons<br>Transformations<br>Bearings<br>Pythagoras<br>Trigonometry<br>Exact trig ratios  | Kinematics<br>Form and solve equations<br>Factorise and solve quadratics (a = 1)<br>Inequalities (linear)<br>Simultaneous equations (linear)<br>Function machines<br>Rearranging<br>Expand double<br>Proof  | Based on outcomes on Units 1-7, a bespoke learning package arranged to re-cover topics least well grasped. These topics are re-tested.  |   |
| Timeline                 | 9-10 weeks   | 4 weeks  | 9-10 weeks   | 9-10 weeks  |   |   |
| SOW                      | Data 2   | Mock preparation   | Shape 3  | GCSE Preparation  |   |   |
|                          | Unit Focus   | Questionnaires<br>Misleading graphs<br>Venn diagrams<br>Probability<br>Frequency and probability tree diagrams<br>Sample space<br>Listing outcomes<br>Sampling   | Past Papers<br>Re-teach topics<br>Revision exercises<br>Intervention<br><br>Details dependent on progress to date  | Metric units<br>Length/area/volume conversions<br>Compound measures<br>Bounds<br>Volume (complex)<br>Surface area (complex)<br>Similarity<br>Congruence<br>Vectors  | Past Papers<br>Re-teach topics<br>Revision exercises<br>Intervention<br><br>Details dependent on progress to date   |   |
| Enrichment Opportunities | Students can participate in the UK Mathematics Trust (UKMT) Maths Challenge, which provides a platform for developing problem-solving skills and mathematical reasoning in a competitive environment. There is unique opportunity to visit Bletchley Park, a historically significant site that showcases the intersection of mathematics, cryptography, and history. The school hosts STEM events designed to inspire and challenge students. These events encompass workshops, guest lectures, and interactive sessions that highlight the practical relevance of STEM fields in today's world. Industry professionals from leading companies frequently visit the school to deliver engaging, hands-on mathematics lessons to entire year groups. |  |  |   |   |   |
| Impact                   | Assessment   | There are Assessment test after each unit. Assessments are followed by a re-teach periods in which problem areas are diagnosed and revisited. Tests are cumulative so content from all previous units appear in all tests, and therefore problem areas are retested in future assessments. During units, Exit Tickets are completed on a fortnightly basis, covering the recent lessons' work. These are teacher marked using WWW, HTI, MAC criteria, and problem areas are corrected by students in next lessons following teacher direction.   |  |   |   |   |
|                          | Literacy and Numeracy links  | Focus on tier 2 and 3 vocabulary throughout. Lots of unique command words in Maths. Focus on this, particularly at GCSE level, with an expectation on students to use sophisticated Mathematical vocabulary in spoken and written answers.   |  |   |   |   |
|                          | How It Is Used / Skills Set Developed / Outcomes / Careers   | Develops problem solving skills, quantitative reasoning, spatial skills, critical thinking and basic numeracy. Success in Maths Can help lead to almost any career path but is particularly well aligned to careers in engineering, Medicine, Veterinary, Science, Maths, accountancy, law etc   |  |   |   |   |

# MATHS Curriculum Overview Higher

|              |   |  |   |  |   |           |
|--------------|---|--|---|--|---|-----------|
| Links to KS2 |   | Topics taught in Year 7 follow on directly from the KS2 National Curriculum content for Maths. Topics cover the "Foundation learners" content as laid out by the OCR specification. Students complete the OCR baseline test on entry to assess grasp of KS2 Mathematical skills and are then set according to this alongside SATs results .  |   |  |   |           |
| Intent       | Statement of Intent   | A creative and ambitious curriculum, rich in knowledge and skills, designed to ignite curiosity and prepare students for everyday life, and future employment. Through this curriculum, students will have the opportunity to:<br>Become fluent in fundamental mathematics, and solve increasingly complex problems over time.<br>Reason mathematically, by following a logical line of thinking, conjecturing, pattern spotting and generalising.<br>Problem solve through mathematical thinking.<br>Communicate mathematically, justifying their thinking and proving their conjectures. |   |  |   |           |
| Timeline     | 7-8 weeks   | 7-8 weeks  | 7-8 weeks   | 7-8 weeks  | 7-8 weeks   | 7-8 weeks |
| SOW          | Unit 1 - Number   | Unit 2 - Algebra   | Unit 3 - Shape  | Unit 4 - Fraction, Percentages and Decimals  | Unit 5 - Probability and Data   |           |
| Unit Focus   | Place value<br>Multiply and divide by powers of ten<br>Four operations with integers<br>Four operations with decimals<br>Rounding<br>Type of number<br>HCF, LCM<br>Negative numbers<br>Order decimals<br>Order of operations<br>Using a calculator<br>Squares, cubes, and roots | Language of algebra (notation)<br>Substitution<br>Simplifying expressions<br>Expanding single brackets<br>Forming expressions<br>Sequences   | Shape terminology (2D)<br>Perimeter<br>Circumference<br>Draw, measure, and name angles<br>Find unknown angles<br>Finding angles in parallel lines<br>Properties of triangles and quadrilaterals<br>Using a compass (constructing triangles)<br>Line and rotational symmetry   | Equivalent fractions<br>Compare and order FDP<br>Add, subtract, multiply, divide fractions<br>Mixed to improper and vice versa<br>Fraction of an amount<br>Percentage of a quantity<br>Percentage increase and decrease  | Pie charts<br>Tally charts<br>Bar charts<br>List outcomes<br>Find theoretical probability<br>Find relative frequency and calculated expected outcomes from this |           |
| Timeline     | 7 weeks   | 7 weeks  | 7 weeks   | 7 weeks  | 7 weeks   | 7 weeks   |
| SOW          | Ratio   | Shape  | Number and data   | Algebra  | Shape   |           |
| Unit Focus   | Convert between metric units of measure, using scale diagrams and maps, direct proportion, inverse proportion, understanding ratio, ratio calculations  | Time and timetables, speed, area, 3D shapes, surface area, coordinates   | Rounding to significant figures, measures of central tendency and spread, frequent tables, scatter diagrams, properties of number, inequalities,  | Basic function machines, solving linear equations, expanding brackets, solving linear inequalities, rules of indices, plot linear graphs   | Volume, forming equations with area and perimeter, forming and solving equations with angle facts, rotation, reflection, translation, enlargement               |           |
| Timeline     | 9-10 weeks  | 9-10 weeks   | 9-10 weeks  | 9-10 weeks   |   |           |
| SOW          | Number 1  | Shape 1  | Algebra 1   | Data 1   |   |           |
| Unit Focus   | Non-calculator arithmetic<br>Priority of operations<br>Using a calculator<br>Estimation<br>Indices<br>Standard form<br>Percentages<br>Surd<br>Negative numbers  | Plans and Elevations<br>Polygons<br>Polyhedra<br>Properties of shapes<br>Construction and Loci<br>Area<br>Arcs and Sectors<br>Surface Area<br>Volume<br>Compound Measures<br>Pythagoras  | Substitution<br>Simplifying products and quotients<br>Expand single and double brackets, and simplify expressions<br>Factorise single brackets<br>Solving equations<br>Rearranging formulas<br>Linear graphs inc parallel/perpendicular<br>Quadratic/cubic/reciprocal /exponential graphs<br>Real life graphs<br>Timetable and mileage charts | Frequency Diagrams<br>Pie Charts<br>Averages<br>Mean from Grouped Data<br>Comparing two data sets<br>Cumulative Frequency and Box Plots<br>Scatter Diagrams<br>Venn Diagrams and Sets<br>Probability – Tree Diagrams<br>Histograms<br>Sampling<br>Enumeration<br>Sample spaces<br>Questionnaires/misleading graphs |   |           |
| Timeline     | 10-11 weeks   | 10-11 weeks  | 10-11 weeks   | 5-6 weeks  |   |           |
| SOW          | Number 2  | Shape 2  | Algebra 2   | Reteach  |   |           |
| Unit Focus   | 4 rules with fractions<br>4 rules with decimals<br>HCF/LCM<br>FDP conversions<br>Ratio<br>Proportionality<br>Recurring conversions  | Angles in parallel lines and polygons<br>Circle theorems<br>Bearings<br>Trigonometry<br>Exact trig ratios<br>Bounds<br>Gradients as ROC<br>Kinematics  | Iteration<br>Form and solve equations<br>Algebraic fractions<br>Factorise and solve quadratics<br>Inequalities (linear + quadratic)<br>Simultaneous equations (linear)<br>Function machines<br>Sequences (linear, quadratic, geometric, Fibonacci)  | Based on outcomes on Units 1-7, a bespoke learning package arranged to re-cover topics least well grasped. These topics are re-tested.   |   |           |
| Timeline     | 9-10 weeks  | 4 weeks  | 9-10 weeks  | 9-10 weeks   |   |           |
| SOW          | Shape 3   | Mock preparation   | Algebra 3   | GCSE Preparation   |   |           |

|                |  |   |  |   |  |  |
|----------------|--|---|--|---|--|--|
| Implementation | Unit Focus   | <p>Transformations</p> <p>Advanced trigonometry</p> <p>Area of triangle (sine)</p> <p>Vectors</p> <p>Trig graphs</p> <p>Similarity</p> <p>Congruence</p>  | <p>Past Papers</p> <p>Re-teach topics</p> <p>Revision exercises</p> <p>Intervention</p> <p>Details dependent on progress to date</p> | <p>Proof</p> <p>Quadratic formula</p> <p>Completing the square</p> <p>Sketching quadratics</p> <p>Equations of circles</p> <p>Tangents to circles</p> <p>Simultaneous equations (w/ quadratic)</p> <p>Transforming graphs</p> | <p>Past Papers</p> <p>Re-teach topics</p> <p>Revision exercises</p> <p>Intervention</p> <p>Details dependent on progress to date</p> |  |
|                | Enrichment Opportunities                                   | <p>Students can participate in the UK Mathematics Trust (UKMT) Maths Challenge, which provides a platform for developing problem-solving skills and mathematical reasoning in a competitive environment. There is unique opportunity to visit Bletchley Park, a historically significant site that showcases the intersection of mathematics, cryptography, and history. The school hosts STEM events designed to inspire and challenge students. These events encompass workshops, guest lectures, and interactive sessions that highlight the practical relevance of STEM fields in today's world. Industry professionals from leading companies frequently visit the school to deliver engaging, hands-on mathematics lessons to entire year groups.</p> |  |   |  |  |
|                | Assessment   | <p>There are Assessment test after each unit. Assessments are followed by a re-teach periods in which problem areas are diagnosed and revisited. Tests are cumulative so content from all previous units appear in all tests, and therefore problem areas are retested in future assessments. During units, Exit Tickets are completed on a fortnightly basis, covering the recent lessons' work. These are teacher marked using WWW, HTI, MAC criteria, and problem areas are corrected by students in next lessons following teacher direction.</p>   |  |   |  |  |
| Impact         | Literacy and Numeracy links                                | <p>Focus on tier 2 and 3 vocabulary throughout. Lots of unique command words in Maths. Focus on this, particularly at GCSE level, with an expectation on students to use sophisticated Mathematical vocabulary in spoken and written answers.</p>   |  |   |  |  |
|                | How It Is Used / Skills Set Developed / Outcomes / Careers | <p>Develops problem solving skills, quantitative reasoning, spatial skills, critical thinking and basic numeracy. Success in Maths Can help lead to almost any career path but is particularly well aligned to careers in engineering, Medicine, Veterinary, Science, Maths, accountancy, law etc</p>   |  |   |  |  |