St Bede's Inter-Church School Mathematics Curriculum Map 2023-2024

The Scheme of Work allows students to study topics at greater depth with the focus on the following five key principles: Coherence, Representation and Structure, Variation, Fluency and Mathematical Thinking.

	Autumn 1 (Michaelmas)	Autumn 2 (Advent)	Spring 1 (Epiphany)	Spring 2 (Lent)	Summer 1 (Easter)	Summer 2 (Trinity)
YEAR 7	**Algebra 1 and Number 1**	**Geometry 1 and PRR**	**Number 2 and Geometry 2**	**Algebra 2 and Probability 1**	**Number 3 and Algebra 3**	**Statistics and Geometry 2**
3 hours per week *Mixed ability teaching for the first two units, then new teaching groups created*	• Sequences • Functions • Coordinates and Graphs • Place value • Working with decimals • Written calculations	• Measures • 2D shapes • Area • Introduction to ratio • Proportion	• Fractions • Angle geometry	• Introduction to algebra and algebraic manipulation • Expressions • Formulae • Likelihood • Probability scale • Calculating probabilities • Combinations	• Rounding • Properties of number • Multiplication and division • Solving equations	• Collecting data and data presentation • Constructions
YEAR 8	**Number 1 and Geometry 1**	**Algebra 1 and PRR**	**Number 2 and Geometry 2**	**Algebra 2 and Probability 2**	**Number 3 and Geometry 3**	**Algebra 3 and Statistics**
3 hours per week *Students set across the year group against another curriculum area*	• Directed numbers • Working with indices • Factors, multiples and primes • Highest Common Factor and Lowest Common Multiple • Product of primes • Angle geometry • Constructions: perpendicular bisector, angle bisector, 2D shapes	• Sequences • Special sequences • Algebraic manipulation • Ratio: simplifying in various forms, sharing an amount in a given ratio, expressing ratio as a fraction and vice versa	• Calculations with fractions • Equivalence of fractions, decimals and percentages • Calculating with percentages • Area of 2d shapes and compound shapes • Nets of cubes and cuboids • Surface area of cuboids, and of triangular prisms for some	• Developing skills in algebraic manipulation • Developing fluency in solving equations of varying complexity • Probability space • Fair/Unfair games • Experimental probability	• Place value and number sense • Developing skills in rounding techniques and using rounding to estimate • Order of operations • Coordinate geometry • Transformations	• Straight line graphs and their properties • Real life graphs • Analysing data

YEAR 9 (by term)	Autumn 1 (Michaelmas)	Autumn 2 (Advent)	Spring 1 (Epiphany)	Spring 2 (Lent)	Summer 1 (Easter)	Summer 2 (Trinity)
4 hours per week minimum *Some students receive an additional one or two hours tuition per week*	• Manipulate algebraic equations and expressions • Expanding a single term outside a bracket • Review solving linear equations • Accuracy and rounding including problem solving calculating with powers, roots and all types of number • Area • Language of circles • Introduction to circumference and area of a circle using investigative approaches • Solving problems involving ratio • Compound measures • Problem solving using written calculation methods **Additional Higher content** • Expanding double brackets • Solving more complex linear equations • Significant figures and estimating answers	• Pythagoras' Theorem • Constructing right angled triangles • Errors in measurement • Comparing distributions • Using formulae in words and in algebraic notation involving all types of number • Volume • Equivalence of measurement: metric to metric, imperial to metric and vice versa • Fractions involving all four operations • Percentages • Four operations involving all types of number • Review directed numbers involving all four operations • Discrete and continuous data • Averages from a list • Averages from tables including grouped data, estimating the mean	• Review algebraic manipulation • Review solving linear equations • Factorisation of linear expressions • Direct proportion (unitary method) • Maps and scales • Properties of linear graphs **Additional Higher content** • Simultaneous linear equations: algebraic and graphical methods • Factorise expressions involving powers • Proportional change	• Angle geometry: review of angles within parallel lines (corresponding, alternate, allied/co-interior) and other angle facts • Interior angles of polygons • 2D representations of 3D shapes • Mutually exclusive events • Probability space • Set theory • Frequency trees • Standard Form • Perimeter of polygons • Circumference of circles **Additional Higher content** • Trigonometry • Geometric proof • Exterior angles of polygons • Tree diagrams • Relative frequency • Calculating probabilities of compound events • Exact values • Circumference of part-circles using exact values	• Solving inequalities • Scatter diagrams • Dual bar charts • Compound bar charts • Sketching graphs of linear functions • Real life graphs • Plans and elevations • Review linear sequences, finding: missing terms, the nth term, generating sequences given the nth term **Additional Higher content** • Inequalities: representation on a number line and algebraically • Graphing inequalities • Cumulative frequency: tables and graphs • Sketching graphs of quadratic, cubic and reciprocal functions	• Similarity • Loci and Constructions • Non-linear sequences: quadratic, Fibonacci-type and geometric • Transformations: enlargement

YEAR 9 (by skill)	Number	Algebra	Geometry and Measures	Ratio, Proportion and Rates of Change	Probability	Statistics
4 hours per week minimum *Some students receive an additional one or two hours tuition per week*	• Standard Form • Exact answers • Errors in measurement • Accuracy and rounding including problem solving calculating with powers, roots and all types of number • Review written calculation methods • Review directed numbers involving all four operations • Percentages • Fractions involving all four operations • Four operations involving all types of number • Properties of number	• Using formulae in words and in algebraic notation involving all types of number • Quadratic sequences • Expanding double brackets • Factorisation of linear expressions • Solving more complex linear equations • Simultaneous linear equations: algebraic and graphical methods • Inequalities: representation on a number line and algebraically • Solving inequalities • Manipulate algebraic equations and expressions • Review linear sequences, finding: missing terms, the nth term, generating sequences given the nth term • Formulating algebraic expressions	• Pythagoras' Theorem • Trigonometry • Sketching graphs of linear, quadratic, cubic and reciprocal functions • Geometric proof • Language of circles • Introduction to circumference and area of a circle using investigative approaches • Angle geometry: review of angles within parallel lines (corresponding, alternate, allied/co-interior) and other angle facts • Exterior and interior angles of polygons • Volume • Transformations: reflection symmetry, rotation symmetry, enlargement and translation • Loci and Constructions • 2D representations of 3D shapes • Real life graphs • Area • Equivalence of measurement: metric to metric, imperial to metric and vice versa • Working with time	• Compound measures • Direct proportion (unitary method) • Proportional change • Solving problems involving ratio	• Mutually exclusive events • Tree diagrams • Relative frequency • Calculating probabilities of compound events • Probability space	• Comparing distributions • Cumulative frequency: tables and graphs • Discrete and continuous data • Averages from tables including grouped data, estimating the mean • Scatter diagrams • Dual bar charts • Compound bar charts

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Throughout **Years 10 and 11**, students follow a linear programme of study, designed to prepare them further for the AQA GCSE Mathematics examination 8300 across the following topic areas: Number, Algebra, Geometry and Measures, Ratio, Proportion and Rates, Probability and Statistics.

The following link is for the AQA GCSE specification
https://www.aqa.org.uk/subjects/mathematics/gcse/mathematics-8300/specification-at-a-glance

Note that the specification gives the overview of the GCSE content for both Higher and Foundation tiers and does not reflect the order in which the subject content is taught.
The framework below indicates the order in which the content of each topic area is taught.

YEAR 10	Autumn 1 (Michaelmas)	Autumn 2 (Advent)	Spring 1 (Epiphany)	Spring 2 (Lent)	Summer 1 (Easter)	Summer 2 (Trinity)
4 hours per week minimum *Some students receive an additional one or two hours tuition per week*	• Sequences: identifying arithmetic progressions, Fibonacci-type sequences, quadratic and simple geometric, nth term of arithmetic progressions both increasing and decreasing • Revisit Highest Common Factor, Lowest Common Multiples, Prime Factorisation • Revisit algebraic notation and use associated vocabulary including identities • Solving linear equations • Applying all four operations,	• Angles, Scale diagrams and bearings • Review collecting, representing and analysing data • Time series • Scatter graphs • Pythagoras' Theorem and basic Trigonometry **Additional Higher Content** • Boxplots • Histograms with equal and unequal class intervals • Cumulative frequency graphs • Trigonometry in 3D	• Rounding techniques including truncation • Inequalities • Calculating with percentages: percentage increase and decrease problems, reverse percentage and simple interest • Perimeter and Area of 2D shapes and composite shapes • Surface area of pyramids and composite shapes **Additional Higher Content** • Upper and Lower bounds	• Find the angle sum of any polygon • Derive and apply properties and definitions of polygons • Plot linear graphs, identify and interpret gradients and intercepts of linear graphs • Real life graphs including reciprocal graphs • Know the gradient of a linear graph represents a rate of change • Measures including density and pressure **Additional Higher Content**	• Indices • Standard Form • Constructions and Loci • Transformations: rotation, reflection, translation and enlargement (including fractional scale factors) **Additional Higher Content** • Estimate powers and roots of any given positive number • Calculate fractional indices • Calculate exactly with surds and simplify expressions with surds	• Statistical measures • Review of basic probability • Plans and elevations **Additional Higher Content** • Upper and lower quartiles and inter-quartile range **End of year 10 examinations**

	including written methods, to simple fractions, mixed numbers and decimals, both positive and negative • Know language used in household finance: profit, loss, cost price, selling price, debit, credit and balance, income tax, VAT and interest rate **Additional Higher Content** • Sequences involving surds • Product rule for counting • Surds • Changing recurring decimals into their corresponding fractions and vice versa		**Whole school year 10 assessment**	• Know and use the properties of gradients of perpendicular lines • Exponential graphs	• Rationalise the denominator • Enlargement with negative scale factors • Describe the changes and invariance achieved by combining rotations, reflections and translations	

YEAR 11	**Autumn 1 (Michaelmas)**	**Autumn 2 (Advent)**	**Spring 1 (Epiphany)**	**Spring 2 (Lent)**	**Summer 1 (Easter)**	**Summer 2 (Trinity)**
4 hours per week minimum *Some students receive an additional one*	• Probability: Venn diagrams and tree diagrams, combined events • Ratio and proportion • Inequalities: solve inequalities in one variable, represent the	• Solve simultaneous linear equations algebraically • Direct and Inverse Proportion • Congruence and Similarity	• Further equations and graphs • Growth and Decay • Sketching graphs **Additional Higher content** • Circle theorems	• Interpret the gradient of a linear graph as a rate of change • Vectors: addition, subtraction and multiplication, and diagrammatic representation	**Revision** **GCSE examinations**	**GCSE examinations**

or two hours tuition per week	solution set on a number line • Volume: know and apply the formulae to calculate volume of cuboids and other right prisms, calculate the volume of spheres, pyramids, cones and composite solids • Numerical methods • Algebra: quadratics, rearranging formulae and identities, factorisation and functions **Additional Higher content** • Conditional probability • Solve inequalities in two variables • Solve quadratic inequalities in one variable • Use set notation • Volume of frustums • Iteration methods • Expanding polynomials • Factorising quadratic expressions • Algebraic proof • Inverse functions and composite functions	**Additional Higher content** • Solve simultaneous equations- linear/quadratic • Area and volume factors **Mock examinations**	• Solve algebraic fractions by completing the square and by using the quadratic formula • Algebraic fractions • Graphs of exponential functions and trigonometric functions • Sine and Cosine rules	**Additional Higher content** • Equation of a circle • Find the equation of a tangent to a circle at a given point • Vector geometry and proof • Pre-calculus and area under a curve • Transforming functions **Mock examination**		