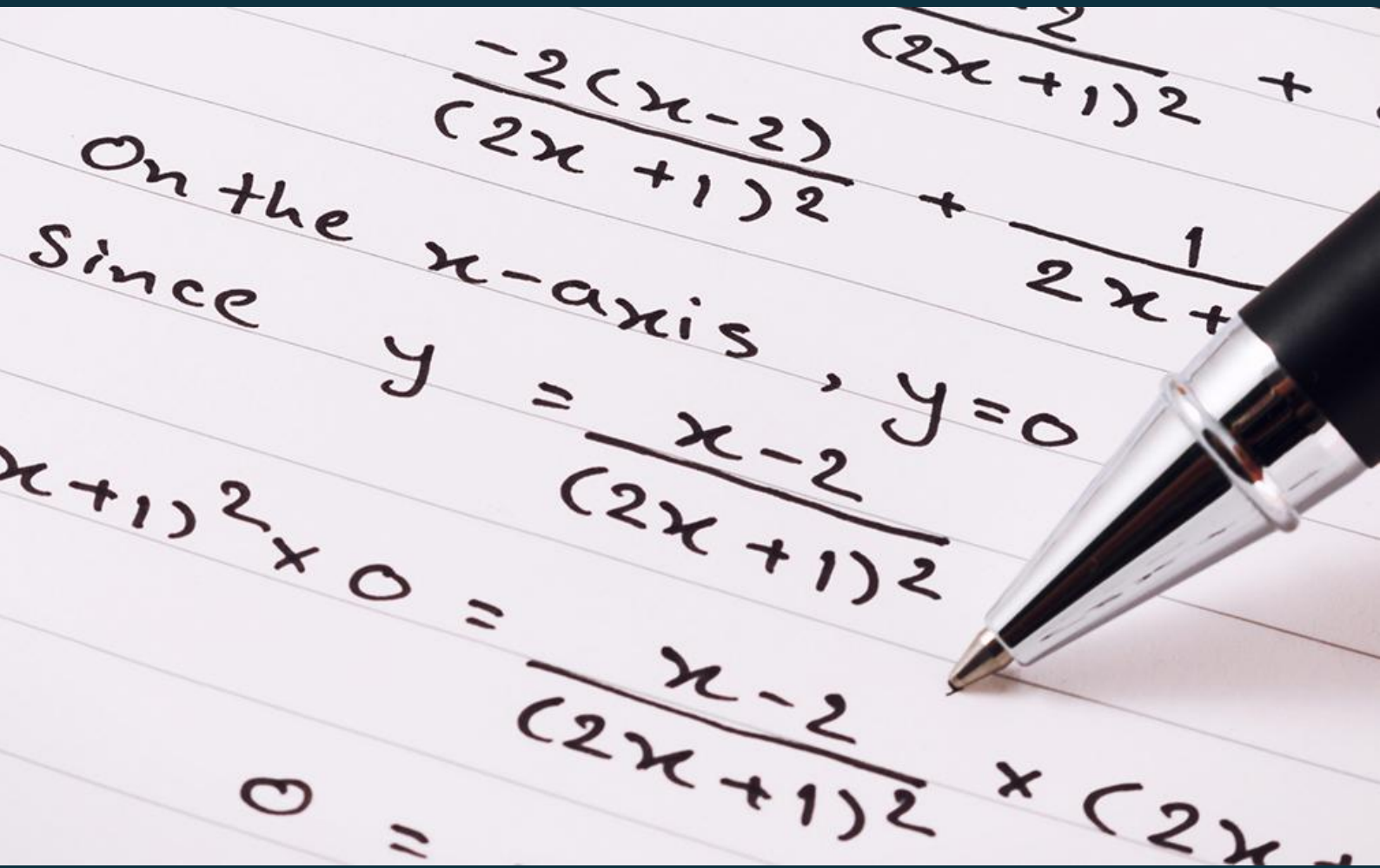
ST BERNARD'S
HIGH SCHOOL

Curriculum Guide
Mathematics
2026 - 27



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Curriculum Intent

Mathematics at St Bernard's offers us an alternative perspective of God's creation and the means to analyse and describe the wonders of the universe. Our department intent is that our students should be given the understanding, knowledge and skills which will enable them to share in that perspective commensurate with their God-given talents.

We believe in all of our St Bernard's mathematicians and design our curriculum with the belief they will go on to use their mathematical skills to be successful and happy in adulthood. To equip our students to that end we will endeavour to develop them as life-long mathematical learners, who will become: independent, resilient and confident adults capable of thriving in both familiar and unfamiliar contexts.

Head of Mathematics, Computing, Business & Economics Faculty

Mr J Miller

Head of Mathematics Department

Mr J Miller

(2nd in Mathematics: Mr Cotgrove)

(KS3 Mathematics Co-ordinator: Ms Rush)

Year 7

The Year 7 maths curriculum builds essential skills in number work, algebra, geometry, and data handling to prepare students for more advanced concepts. Early topics include written calculation methods, negative numbers, decimals, and basic percentages, helping students gain confidence with numbers.

Next, students focus on factors, multiples, equivalent fractions, and simple sequences, developing their understanding of number patterns and relationships. They then move on to algebra, learning to write expressions, solve linear equations, and plot linear graphs.

Geometry topics cover angles, perimeter and area of 2D shapes, properties of 3D shapes, and symmetry. Data handling introduces averages, data representation, and basic probability concepts. Finally, students explore ratio, proportion, and rates of change with practical problem-solving.

Regular assessments throughout the year track progress and ensure understanding, supported by ongoing revision and practice to reinforce learning.

Number of lessons per fortnight: 4

Skills developed: Using written methods for basic calculations, working with negative numbers, understanding decimals and percentages, finding factors, multiples, and prime numbers, simplifying and comparing fractions, recognizing patterns and sequences, writing and solving simple algebra equations, drawing and reading straight-line graphs, measuring angles and calculating perimeter and area, knowing properties of 3D shapes, identifying symmetry in shapes, finding averages (mean, median, mode), reading and making charts and tables, understanding basic probability, solving ratio and proportion problems, thinking logically to solve problems, using math in everyday situations.

Classes: Students are taught in Mixed Ability Classes. There is a support class formed with a reduced class size and an additional specialist member of staff.

Essential equipment: Calculator, Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Daily Homework support club (Maths Buddies) in W21 at lunchtime. Junior Mathematics Challenge Club.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.

	Content studied	**Literacy focus**	**What parents can do to help**
Autumn Term	**Pen and Pencil Calculations** **Factors and Multiples** **Sequences** **Perimeter and Area** **Negative Numbers** **Averages** **Equivalent Fractions**	In these units, students will learn to use key math words clearly, such as sum, factor, sequence, perimeter, and mean. They will practice explaining their thinking in simple sentences, describe patterns, write measurements correctly, and compare numbers. The focus is on building clear communication using the right vocabulary and short explanations to help understand and solve problems.	***Watch, Explore & Learn Together*** **(Login & Password: ParentSTB)** Real Life Problems – Without a Calculator (Link) Highest Common Factors (Link) Nth Term of a Sequence (Link) Negative Numbers in Real Life – Without a Calculator (Link) Median, Mode & Range (Link) Introduction to Equivalent Fractions (Link)
Spring Term	**Algebraic Expressions** **Angles** **Decimals** **Linear Graphs**	Students will use important math words like variable, expression, angle, decimal, graph, and percentage. They will practice	Watch, Explore & Learn Together (Login & Password: ParentSTB) Formulae Expressed in Words (**Link**)

	Percentages	writing clear explanations, describe how shapes and graphs behave, explain steps in calculations, and compare amounts using correct terms. The goal is to help students communicate their ideas clearly with simple language and accurate vocabulary.	Properties of Special Triangles (**Link**) Short Multiplication with Decimals (**Link**) Seeing Straight Line Graphs for the first time (**Link**) Percentage Increase – Without a calculator (**Link**)
Summer Term	**3D Shapes** **Introduction to Probability** **Ratio, Proportion & Rates of Change** **Symmetry** **Solving Equations** **Using Data**	Students will learn to use key terms like faces, edges, probability, ratio, symmetry, equation, and data. They will practice describing shapes, explaining chances, comparing ratios, solving problems step-by-step, and interpreting information from charts. The focus is on using precise language and clear explanations to show their understanding.	*Watch, Explore & Learn Together* (Login & Password: ParentSTB) Properties of 3D Shapes (**Link**) The Probability Scale (**Link**) Real-Life Ratio (**Link**) Rotational Symmetry (**Link**) Solving Equation using a balancing method (**Link**)

Helpful books/websites:

Key Stage 3 Maths Now Textbook

CGP Key Stage 3 Mathematics for Year 7

Sparx Maths: https://sparxmaths.com/

MathsWatch: https://vle.mathswatch.co.uk/vle/

Opportunities for wider reading/research:

Maths Made Easy: Key Stage 3 Maths Workbook by Carol Vorderman

Alex's Adventure in Numberland by Alex Bellios

Maths Girls by Hiroshi Yuki

Year 8

This year, students deepen their understanding of transformations, including rotations, reflections, enlargements, and scaling. They work with numbers, decimals, fractions, and compound units, and extend their knowledge of percentage changes.

Students develop skills in drawing and interpreting graphs, exploring correlation, and applying graphing to real data. In algebra, they manipulate expressions and brackets, solve equations, and rearrange formulae. Proportion and ratio are also key focuses.

Geometry topics include circles, polygons, prisms, cylinders, and Pythagoras' theorem. Students calculate areas, volumes, and work with properties of shapes. Probability is introduced with basic calculations of chance.

Throughout the year, students practice decimals and fractions in various contexts. Regular assessments monitor progress, supported by problem-solving and revision activities.

Number of lessons per fortnight: 4

Skills developed: Understanding and performing transformations (rotation, reflection, enlargement, translation), working confidently with numbers, decimals, fractions, and compound units, calculating percentage increases and decreases, drawing, interpreting, and applying graphs, including understanding correlation, manipulating algebraic expressions and brackets, solving equations and rearranging formulae, applying proportion and ratio to problem solving, calculating properties of circles, polygons, prisms, and cylinders, using Pythagoras' theorem to solve problems, understanding and calculating probabilities, communicating mathematical reasoning clearly, applying maths skills to real-world problems.

Classes: Students are taught in Sets in each X and Y Band (8x1/Ma, 8x2/Ma, 8x3/Ma& 8x4/Ma on the X-Band. 8y1/Ma, 8y2/Ma & 8y3/Ma on the Y-Band)

Essential equipment: Calculator, Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Daily Homework support club (Maths Buddies) in W21 at lunchtime. Junior Mathematics Challenge Club.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.

	Content studied	**Literacy focus**	**What parents can do to help**
Autumn Term	**Transformations** **Working with numbers** **Percentage Changes** **Graphs** **Correlation** **Congruence & Scaling** **Manipulating algebraic expressions** **Working with fractions**	Students will learn to use important terms like transformation, percentage, graph, correlation, congruence, scale, algebra, and fraction. They will practice explaining how shapes change, describing number work, interpreting graphs and data relationships, and writing clear steps for algebra and fraction calculations. The focus is on using precise vocabulary and clear sentences to communicate mathematical ideas effectively.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Rotations in maths (Link) Introducing decimal multipliers for percentages (Link) Exploring y=mx+c (Link) Scatter Diagrams (Link) Congruent Triangles (Link) Multiplying Fractions (Link)
Spring Term	**Circles** **Finding probabilities** **Equations and formulae** **Proportion** **Application of graphs** **Percentage changes (further)** **Polygons**	Students will use key words like circle, probability, equation, formula, proportion, graph, polygon, expression, and equation. They will practice explaining how to find probabilities, write and use formulas, work with proportions,	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Properties of Circles (Link) Forming and Solving Basic Equations (Link) Direct Proportion (Link)

	Expressions & Equations	interpret graphs, and solve expressions and equations. The focus is on using clear, accurate language and writing step-by-step explanations to show understanding.	Polygons (Link)
Summer Term	**Prisms & Cylinders** **Compound Units** **Working with Decimals** **Pythagoras' Theorem** **Manipulating Brackets**	Students will learn to use important terms like prism, cylinder, compound units, decimals, Pythagoras' theorem, and brackets. They will practice describing 3D shapes, working with measurements, explaining calculations with decimals, and writing clear steps when manipulating algebraic brackets. The focus is on using precise vocabulary and clear explanations to communicate their mathematical thinking.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Volume of Prisms (Link) Pythagoras' Theorem (Link) Estimating Answers (Link) Expanding Brackets (Link)

Helpful books/websites:

Key Stage 3 Maths Now Textbook

CGP Key Stage 3 Mathematics

Sparx Maths: https://sparxmaths.com/

MathsWatch: https://vle.mathswatch.co.uk/vle/

Opportunities for wider reading/research:

The Number Devil by Hans Magnus Enzensberger

The Curious Incident of the Dog in the Night-time by Mark Haddon

Maths Curse by Jon Scieszka & Lane Smith

Year 9

In Year 9, the Higher classes continue to build on their mathematical knowledge with a greater focus on algebra, geometry, and real-world applications. The year begins by reinforcing core skills in number properties and fraction calculations, before exploring angles, polygons, and reasoning with geometric facts.

Students then apply their number skills to more complex problems involving fractions, ratio, and proportion, as well as percentages using a calculator. They study number sequences and learn to spot patterns and rules. In algebra, students practise expanding and factorising, rearranging formulae, and begin to work with straight-line graphs and transformations.

The geometry strand covers area and perimeter, volume and surface area, and introduces similarity in 2D and 3D shapes, alongside congruent proofs. Students also learn basic trigonometry to solve right-angled triangle problems. In constructions, they explore loci and apply compass and ruler methods.

Finally, students develop skills in statistics and data, interpreting graphs, charts, and averages, and deepening their ability to analyse and present information mathematically.

This year prepares students for the transition into more advanced GCSE content by developing fluency, reasoning, and problem-solving across all topics.

For the Foundation classes, this year builds on key skills across number, algebra, geometry, and data. Students begin by developing fluency with number properties, fractions, decimals, and percentages, including both calculator and non-calculator methods.

They explore angle reasoning, area and perimeter, and apply geometric knowledge in constructions, loci, volume, and surface area. Algebra skills are strengthened through solving linear equations, expanding and factorising, rearranging formulae, and working with straight line equations.

Students also develop understanding of ratio, proportion, and trigonometry, and build confidence in transformations and handling data and statistics. Throughout, the focus is on problem solving, reasoning, and applying maths to real-life contexts.

Number of lessons per fortnight: 4

Higher Skills developed: Recognising and using number properties, calculating with fractions, reasoning with angles and polygons, solving problems using fractions, ratio and proportion, identifying and continuing number sequences, expanding and factorising algebraic expressions, performing and describing transformations, interpreting and comparing statistical data, calculating percentages using a calculator, finding area and perimeter of shapes, simplifying and factorising complex expressions, drawing and interpreting straight line graphs, constructing shapes and loci accurately, rearranging algebraic formulae, applying trigonometry to right-angled triangles, calculating volume and surface area of 3D shapes, identifying and using similarity in 2D and 3D shapes, writing and understanding congruence proofs.

Foundation Skills developed: Recognising and applying number properties, performing fraction calculations, reasoning with angles, rounding and estimating using decimals, solving linear equations, describing and performing transformations, solving problems using ratio and proportion, analysing and interpreting data, calculating percentages using a calculator, finding area and perimeter, expanding and factorising algebraic expressions, working with straight line equations, constructing shapes and loci accurately, rearranging algebraic formulae, using trigonometry in right-angled triangles, calculating volume and surface area, applying non-calculator methods efficiently, solving more complex linear equations.

Classes: Students are taught in Sets in each X and Y Band (9x1/Ma, 9x2/Ma, 9x3/Ma& 9x4/Ma on the X-Band. 9y1/Ma, 9y2/Ma, 9y3/Ma & 9y4/Ma on the Y-Band). Classes 9x4/Ma and 9y4/Ma are on a Foundation Curriculum Pathway.

Essential equipment: Calculator, Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Daily Homework support club (Maths Buddies) in W21 at lunchtime.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.

Higher Curriculum

	Content studied	Literacy focus	What parents can do to help
Autumn Term	**Number Properties** **Fraction Calculations** **Angle Reasoning & Polygons** **Fractions, Ratio & Proportion** **Number & Sequences** **Expanding & Factorising** **Transformations** **Ratio & Proportion** **Statistics & Data**	Students will use key mathematical language such as multiple, factor, numerator, denominator, angle, polygon, ratio, proportion, sequence, expression, and transformation. They will practise explaining their methods clearly, describing patterns, interpreting data, and justifying reasoning. The focus is on using accurate vocabulary and writing clear, step-by-step explanations to show understanding across number, algebra, geometry, and statistics.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y9 Higher: (1) Angles and Parallel Lines (Link) (2) Expanding Double Brackets (Link) (3) Estimate the Mean from Grouped Frequency Table (Link)
Spring Term	**Percentages (Calculator)** **Area & Perimeter** **Further Expanding & Factorising** **Straight Line Graphs** **Construction & Loci** **Rearranging Formulae** **Trigonometry**	Students will use key terms such as percentage, area, perimeter, expression, gradient, locus, formula, and trigonometry. They will practise explaining calculation steps, describing geometric constructions, interpreting graphs, and rearranging formulae. The focus is on using correct mathematical language and writing clear explanations to support problem solving and reasoning.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y9 Higher: (1) Calculate Compound Intereset and Depreciation using a calculator (Link) (2) Expanding Triple Brackets (Link) (3) Use SOH CAH TOA Trigonometry to find unknown lengths (Link)
Summer Term	**Volume & Surface Area** **Similar 2D Shapes** **Similar 3D Shapes** **Congruent Proof**	Students will use precise vocabulary such as volume, surface area, similar shapes, scale factor, and congruent. They will practise describing methods, comparing shapes, and writing clear mathematical proofs. The focus is on using accurate terms and structured explanations to show reasoning and understanding of shape and space.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y9 Higher: (1) Volume of a Prism (Link) (2) Find a missing length with similar 2d shapes (Link) (3) Complete a Congruent Proof (Link)

Foundation Curriculum

	Content studied	Literacy focus	What parents can do to help
Autumn Term	**Number Properties** **Fraction Calculations** **Angle Reasoning** **Decimals, Rounding & Approximation** **Solving Linear Equations** **Transformations** **Ratio & Proportion** **Statistics & Data** **Percentages (Calculator)**	Students will use key mathematical vocabulary such as factor, multiple, numerator, denominator, angle, estimate, equation, transformation, ratio, proportion, data, and percentage. They will practise explaining their methods clearly, describing patterns, interpreting information, and using correct terms to show their understanding in written and spoken work. The	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y9 Foundation: (1) Dividing Fractions (Link) (2) Solving Equations by Balancing (Link) (3) Calculate Averages and the Range (Link)

		focus is on clear communication and accurate use of maths language.	
Spring Term	**Area & Perimeter** **Expanding & Factorising** **Straight Line Equations** **Construction & Loci** **Rearranging Formulae** **Trigonometry**	Students will use key terms such as area, perimeter, expand, factorise, gradient, equation, construct, locus, formula, and trigonometry. They will practise explaining their working, describing shapes and lines, and using accurate mathematical language when solving problems. The focus is on clear step-by-step reasoning and correct use of subject-specific vocabulary.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y9 Foundation: (1) Find the area of a triangle (Link) (2) Expanding a single bracket (Link) (2) Using pythagoras' theorem (Link)
Summer Term	**Volume & Surface Area** **Non-Calculator Skills** **Solving Linear Equations (Further)**	Students will use terms like volume, surface area, simplify, solve, equation, and method. They will practise explaining calculations clearly, writing out step-by-step solutions, and using precise mathematical language, especially when working without a calculator. The focus is on clarity, accuracy, and logical reasoning in their written and spoken explanations.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y9 Foundation: (1) Volume of a Prism (Link) (2) Surface area of cuboids (Link) (3) Solving equations with unknowns on both sides (Link)

Helpful books/websites:

Collins Higher Edexcel GCSE Textbook

Collins Foundation Edexcel GCSE Textbook

Sparx Maths: https://sparxmaths.com/

MathsWatch: https://vle.mathswatch.co.uk/vle/

Opportunities for wider reading/research:

Fermat's Last Theorem by Simon Singh

How Not to Be Wrong: The Power of Mathematical Thinking by Jordan Ellenberg

The Man Who Loved Only Numbers by Paul Hoffman

Year 10

This subject is a compulsory GCSE subject

Year 10 Mathematics, develops advanced number, algebra, geometry, and data skills. Students deepen their understanding of probability, including combined events, and apply techniques like counting strategies and capture–recapture.

For Higher students in algebra, students work with indices, standard form, recurring decimals, surds, and solve increasingly complex equations — including linear, simultaneous, and quadratic equations using factorising and the quadratic formula. They also manipulate algebra through expanding brackets, rearranging formulae, and exploring graphical inequalities.

Data handling is broadened with tools such as scatter diagrams, frequency polygons, cumulative frequency graphs, box plots, and histograms. Geometry work focuses on circle theorems and variation, linking reasoning and calculation. Throughout, students strengthen fluency, problem-solving and reasoning, and make connections between different areas of mathematics.

For Foundation students in algebra, students solve linear equations and analyse sequences, while in probability they explore single and combined events, using systematic methods to calculate outcomes.

Statistical skills are enhanced through work on averages, frequency polygons, scatter diagrams, and estimating the mean, improving students' ability to interpret and present data.

Geometry and measures topics include construction and loci, volume and surface area, and work with arcs and sectors, extending to 3D shapes such as cones, spheres, and pyramids. Students apply Pythagoras' Theorem and trigonometric ratios (SOHCAHTOA) in right-angled triangles, while also studying congruent and similar triangles, developing reasoning and proof.

Year 10 Mathematics strengthens mathematical communication, real-life application, and the ability to move fluently between representations, laying strong foundations for GCSE-level study.

Number of lessons per fortnight: 5

Higher Skills developed: Understanding and applying probability, analysing combined events, converting recurring decimals to fractions, using powers and standard form, simplifying and calculating with indices and surds, using counting strategies in probability, solving linear and simultaneous equations, interpreting and solving inequalities graphically, expanding brackets and factorising quadratics, rearranging complex formulae, solving quadratic equations by factorising and using the quadratic formula, analysing data using capture–recapture methods, interpreting scatter diagrams and frequency polygons, drawing and reading cumulative frequency graphs and box plots, constructing and interpreting histograms, applying and proving circle theorems, understanding direct and inverse variation.

Foundation Skills developed: calculating with decimals and fractions, solving linear equations, understanding and using percentages, applying compound and reverse percentage methods, working with direct and inverse proportion, identifying and continuing sequences, calculating and interpreting probability of single and combined events, finding statistical averages, interpreting frequency polygons and scatter diagrams, estimating the mean from grouped data, using geometric construction techniques, solving problems involving volume and surface area, understanding arcs and sectors, working with 3D shapes like cones, spheres, and pyramids, applying Pythagoras' Theorem, using trigonometry (SOHCAHTOA), identifying congruent and similar triangles, improving mathematical reasoning and communication.

Classes: Students are taught in Sets in each X and Y Band (10x1/Ma, 10x2/Ma, 10x3/Ma& 10x4/Ma on the X-Band. 10y1/Ma, 10y2/Ma, 10y3/Ma & 10y4/Ma on the Y-Band). Classes 10x4/Ma and 10y4/Ma are on a Foundation Curriculum Pathway.

Essential equipment: Calculator, Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Daily Homework support club (Maths Buddies) in W21 at lunchtime.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.

Higher Curriculum

	Content studied	**Literacy focus**	**What parents can do to help**
Autumn Term	Probability Combined Events Powers & Standard Form Recurring Decimal to Fraction Indices Surds Counting Strategies Solving Linear Equations Simultaneous Equations Graphical Inequalities	Students will use key mathematical terms such as probability, outcome, event, standard form, index, surd, recurring decimal, equation, inequality, and solution. They will practise explaining their reasoning, describing methods clearly, and using accurate vocabulary when comparing, calculating, and solving problems. Emphasis is placed on understanding and correctly using notation, interpreting written questions, and communicating their thinking effectively in both written and spoken form.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y10 Higher: (1) Calculate Probabilities from a Tree Diagram (Link) (2) Use algebra to express a recurring decimal as a fraction (Link) (2) Solve Simultaneous Equations (Link)
Spring Term	Expanding Brackets Factorising Quadratics Rearranging Formulae Solving by Factorising Solving using Quadratic Formula Capture, Tag & Release Scatter Diagrams Frequency Polygons Cumulative Frequency Graphs Box & Whisker Plots	Students will use precise mathematical vocabulary such as expand, factorise, quadratic, formula, rearrange, estimate, frequency, variable, outlier, and median. They will develop their ability to describe algebraic processes clearly, interpret data representations like scatter diagrams and box plots, and explain the steps used in solving equations. Focus is placed on using correct terminology, interpreting complex questions, and communicating mathematical reasoning accurately in writing and discussion.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y10 Higher: (1) Factorising Quadratics (Link) (2) Using the Quadratic Formula to Solve Equations (Link) (3) Draw Cumulative Frequency Diagrams (Link)
Summer Term	Histograms Circle Theorems Variation	Students will use key terms such as histogram, class interval, frequency density, circle theorem, chord, tangent, arc, direct variation, and inverse variation. They will practise interpreting questions carefully, describing mathematical relationships, and justifying their reasoning. The focus is on accurate use of mathematical language, clear explanation of diagrams and patterns, and confidently communicating ideas in both written and verbal form.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y10 Higher: (1) Drawing a Histogram (Link) (2) Using Circle Theorems (Link) (3) Direct & Inverse Proportion (Using k) (Link)

Foundation Curriculum

	Content studied	Literacy focus	What parents can do to help
Autumn Term	Calculations with Decimals Fraction Arithmetic Probability & Events Combined Events Sequences Solving Linear Equations Percentages Compound Interest Reverse Percentages Direct Proportion Inverse Proportion	Students will use key mathematical terms such as decimal, fraction, probability, event, sequence, term, equation, percentage, compound interest, reverse percentage, direct proportion, and inverse proportion. They will practise explaining methods, describing patterns, and interpreting worded problems clearly. The focus is on using accurate vocabulary, understanding the meaning of mathematical terms in context, and communicating reasoning effectively in both spoken and written form.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y10 Foundation: (1) Using a Two-Way Table for Probability (Link) (2) Finding the nth term of a Linear Sequence (Link) (3) Calculating an Inverse Proportion (Link)
Spring Term	Statistical Averages Frequency Polygons Scatter Diagrams Estimating the Mean Construction & Loci Volume and Surface Area Arcs & Sectors Cones, spheres & pyramids Pythagoras' Theorem	Students will use key vocabulary such as mean, median, mode, range, frequency, correlation, locus, surface area, volume, arc, sector, and theorem. They will practise interpreting and constructing diagrams, describing methods for calculation, and explaining spatial reasoning. Emphasis is placed on accurate use of mathematical terms, clear communication of procedures, and interpreting statistical and geometric information both verbally and in written form.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y10 Foundation: (1) Drawing a Frequency Polygon (Link) (2) Estimating the Mean from a Grouped Frequency Table (Link) (3) Find the area of a sector (Link)
Summer Term	Trigonometry (SOHCAHTOA) Congruent Triangles Similar Triangles	Students will use terms such as trigonometry, sine, cosine, tangent, hypotenuse, opposite, adjacent, congruent, and similar. They will practise explaining geometric relationships, describing steps in calculations, and justifying conclusions using correct mathematical language. The focus is on clear communication of reasoning, accurate use of key terminology, and interpreting diagrams effectively in both written and verbal responses.	***Watch, Explore & Learn Together*** **(Login & Password:** ParentSTB) Three Key Skills for Y10 Foundation: (1) Use SOH CAH TOA Trigonometry to find missing sides (Link) (2) Congruent Triangles (Link) (3) Find missing lengths in similar shapes (Link)

Helpful books/websites:

Collins Higher GCSE Edexcel Textbook

Collins Higher GCSE Edexcel Textbook

CGP Revision Guide, Exam Practice Book & Revision Flashcards (available at school shop)

Sparx Maths: https://sparxmaths.com/

MathsWatch: https://vle.mathswatch.co.uk/vle/

Opportunities for wider reading/research:

The Number Mysteries by Marcus du Sautoy — explores fascinating number puzzles and history.

The Joy of x by Steven Strogatz — a friendly introduction to the beauty of math in everyday life.

How to Bake Pi by Eugenia Cheng — connects math concepts with baking and logic.

Mathematics: A Very Short Introduction by Timothy Gowers — a concise overview of math ideas.

Math Girls by Hiroshi Yuki — a novel that incorporates math problems and concepts in a story format.

Plus Magazine (plus.maths.org) — engaging articles on math topics written for students.

Year 11

This subject is a compulsory GCSE subject.

The Year 11 Higher Curriculum develops skills in advanced algebra, geometry, and graph work. Students begin with right-angled trigonometry and extend this to non-right-angled triangles using the sine and cosine rules. They explore area under graphs and instantaneous rates of change, building understanding of how graphs model real-life situations.

In algebra, students manipulate algebraic fractions, study the transformation of graphs, and work with non-linear equations. They deepen their understanding of functions, including composite and inverse functions, and apply iteration methods to approximate solutions.

Students also explore vector geometry, interpreting and constructing vector arguments, and develop logical reasoning through algebraic proof. The term ends with targeted revision, consolidating key GCSE Higher content to support success in exams.

The foundation curriculum builds strong foundations in algebra, number, and graph work. Students begin by refining their written calculation strategies and working confidently with powers, indices, and standard form. Algebraic skills are deepened through substitution, solving linear equations, handling inequalities, and working with simultaneous equations.

They explore similar 2D shapes and learn how to apply scale factors. A major focus is on graphical understanding, including plotting and interpreting linear, non-linear, cubic, and reciprocal graphs, as well as analysing distance-time and speed-time graphs. Students also learn how to factorise quadratics and solve quadratic equations by factorising, building the foundation for more advanced algebra.

Revision Revolution is the theme for Year 11 Mathematics, where students engage in a variety of targeted activities designed to reinforce and consolidate knowledge across all topics taught throughout Key Stage 4.

Number of lessons per fortnight: 4

Higher Skills developed: applying trigonometric ratios in right-angled and non-right-angled triangles, using the sine and cosine rules, calculating area under graphs, estimating instantaneous rates of change, interpreting and sketching non-linear graphs, simplifying and manipulating algebraic fractions, transforming graphs of functions, working with composite and inverse functions, using iteration to find approximate solutions, understanding and applying vector notation and reasoning, constructing clear and logical algebraic proofs, solving multi-step problems, communicating mathematical reasoning effectively.

Foundation Skills developed: accurate written calculations, working with powers and indices, converting and calculating with standard form, algebraic substitution, solving linear equations and inequalities, solving simultaneous equations, identifying and applying properties of similar 2D shapes, plotting and interpreting linear and non-linear graphs, finding equations of straight lines, analysing distance-time and speed-time graphs, factorising quadratic expressions, solving quadratic equations by factorising, and interpreting cubic and reciprocal graphs.

Classes: Students are taught in Sets in each X and Y Band (11x1/Ma, 11x2/Ma, 11x3/Ma& 11x4/Ma on the X-Band. 11y1/Ma, 11y2/Ma, 11y3/Ma & 11y4/Ma on the Y-Band). Classes 11x4/Ma and 11y4/Ma are on a Foundation Curriculum Pathway.

Essential equipment: Calculator, Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Daily Homework support club (Maths Buddies) in W21 at lunchtime.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.

Higher Curriculum

	Content studied	Literacy focus	What parents can do to help
Autumn Term	Right-Angled Trigonometry Further Trigonometry (Non-Right Angled Triangles) Area under Graphs Instantaneous Rates of Change Non-Linear Graphs Algebraic Fractions	Students will use precise mathematical language such as hypotenuse, sine, cosine, tangent, gradient, rate of change, quadratic, reciprocal, and algebraic fraction. They will develop the ability to describe multi-step processes, interpret complex graphs, and explain reasoning clearly. The focus is on understanding mathematical vocabulary in context, reading problem-solving scenarios accurately, and clearly communicating algebraic and graphical methods in both written and verbal form.	**Support revision towards the Mock Exam this term** Tip #1 Encourage a Quiet, Regular Revision Routine through a revision timetable Tip #2 Use the Topic List that is on the VLE. Tip #3 Help with Revision Tools • MathsWatch • MathsGenie
Spring Term	Transformation of Graphs Functions (Composite & Inverse) Iteration Vector Geometry Algebraic Proof	Students will use key terms such as transformation, translation, reflection, composite function, inverse function, iteration, vector, magnitude, and proof. They will develop the ability to interpret function notation, describe transformations, explain iterative processes, and construct clear algebraic arguments. Emphasis is placed on using precise mathematical vocabulary, communicating reasoning accurately, and justifying each step in written and spoken explanations.	**Support revision towards the Mock Exam this term** Tip #1 Encourage a Quiet, Regular Revision Routine through a revision timetable Tip #2 Edexcel Foundation Revision Checklist (Link) Tip #3 Help with Revision Tools • MathsWatch • MathsGenie
Summer Term	Revision		**Three tips for helping to prepare your child for their final exams.** **#1 Reassure, Don't Pressure** Remind your child that **effort matters more than perfection**. Encourage them to **focus on progress**, not panic about grades. **#2 Help Them Stay Organised** Support them in **making and sticking to a revision plan**. Make sure they have quiet space, equipment, and time to revise. **#3 Be Their Steady Support** Ask how they're doing — and listen. Offer help with breaks, meals, or just being there. Encourage sleep, fresh air, and balance.

Foundation Curriculum

	Content studied	Literacy focus	What parents can do to help
Autumn Term	Written Calculations (Non-Calculator Skills Powers and Indices Standard Form Algebra (substitution) Solving Linear Equations Linear Inequalities Simultaneous Equations	Students will develop fluency with mathematical vocabulary such as index, power, coefficient, standard form, inequality, and simultaneous. They will practise reading and interpreting algebraic expressions and equations, explaining substitution methods, and describing the steps taken to solve equations and inequalities. Emphasis is placed on clearly communicating logical processes and using correct terminology when justifying solutions.	**Support revision towards the Mock Exam this term** Tip #1 Encourage a Quiet, Regular Revision Routine through a revision timetable Tip #2 Use the Topic List that is on the VLE. Tip #3 Help with Revision Tools • MathsWatch • MathsGenie
Spring Term	Similar 2D Shapes Linear Graphs Equation of Straight Lines Non-Linear Graphs Distance/Speed-time graphs Factorising quadratics Solving quadratic equations by factorising Cubic & Reciprocal Graphs	Students will use mathematical terms such as similar, scale factor, gradient, intercept, quadratic, cubic, and reciprocal. They will develop the ability to describe relationships between variables, interpret and explain the meaning of linear and non-linear graphs, and communicate methods for factorising and solving equations. Focus is placed on accurate use of function notation, step-by-step explanations of problem-solving processes, and interpreting real-life graphs involving speed, distance, and time.	**Support revision towards the Mock Exam this term** Tip #1 Encourage a Quiet, Regular Revision Routine through a revision timetable Tip #2 Edexcel Higher Revision Checklist (Link) Tip #3 Help with Revision Tools • MathsWatch • MathsGenie
Summer Term	Revision		**Three tips for helping to prepare your child for their final exams.** **#1 Reassure, Don't Pressure** Remind your child that **effort matters more than perfection**. Encourage them to **focus on progress**, not panic about grades. **#2 Help Them Stay Organised** Support them in **making and sticking to a revision plan**. Make sure they have quiet space, equipment, and time to revise. **#3 Be Their Steady Support** Ask how they're doing — and listen. Offer help with breaks, meals, or just being there. Encourage sleep, fresh air, and balance.

Helpful books/websites:

Collins Higher GCSE Edexcel Textbook

Collins Higher GCSE Edexcel Textbook

CGP Revision Guide, Exam Practice Book & Revision Flashcards (available at school shop)

Sparx Maths: https://sparxmaths.com/

MathsWatch: https://vle.mathswatch.co.uk/vle/

Opportunities for wider reading/research:

The Number Mysteries by Marcus du Sautoy — explores fascinating number puzzles and history.

The Joy of x by Steven Strogatz — a friendly introduction to the beauty of math in everyday life.

How to Bake Pi by Eugenia Cheng — connects math concepts with baking and logic.

Mathematics: A Very Short Introduction by Timothy Gowers — a concise overview of math ideas.

Math Girls by Hiroshi Yuki — a novel that incorporates math problems and concepts in a story format.

Plus Magazine (plus.maths.org) — engaging articles on math topics written for students.

Year 12

The St Bernard's Year 12 A Level course introduces students to key concepts in pure mathematics, statistics, and mechanics, building a strong foundation for further mathematical study. In the pure mathematics content, students develop fluency in algebra, coordinate geometry, and trigonometry, and begin to explore more advanced topics such as differentiation, integration, and surds. The course also strengthens problem-solving and reasoning skills through work with proof, functions, and sequences and series.

In statistics, students learn how to represent, interpret, and analyse data, including the use of measures such as mean, standard deviation, and quartiles. They explore probability, binomial distributions, and apply statistical techniques using real-world data, supported by the use of a large data set.

The mechanics component introduces students to the mathematical modelling of physical systems, including kinematics, forces, and Newton's laws of motion. Students learn how to represent motion using equations and graphs, and apply mathematical methods to practical scenarios.

Throughout the course, students strengthen their algebraic manipulation, develop precise mathematical communication, and build the skills necessary to solve unfamiliar problems, laying the groundwork for progression to A Level Mathematics and related disciplines.

Number of lessons per fortnight: 5

Skills developed: algebraic manipulation, solving equations, working with functions, interpreting graphs, applying calculus (differentiation and integration), using trigonometric identities, mathematical modelling, logical reasoning, problem solving, interpreting statistical data, calculating probabilities, analysing distributions, understanding forces and motion, applying kinematics equations, using mathematical language and notation accurately, and working systematically and efficiently.

Essential equipment: Calculator (Casio FX-991CW Classwiz Advanced Scientific Calculator), Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Become a Mathematics Mentor to support younger students in the main school by assisting them during lessons with activities and contributing to engaging math-related events during Culture Week.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.	**Content studied**	**Literacy focus**	**What parents can do to help**
Autumn Term	**Pure & Statistics** Coordinate Geometry, Measures of Location & Spread, Representation of Data, Correlation **Pure & Mechanics** Transition from GCSE to A Level Mathematics, Quadratics, Equations and Inequalities, Vectors, Modelling in Mechanics, Constant Acceleration	**Pure & Statistics:** Develop precise use of mathematical terminology, interpret written statistical contexts, describe relationships and trends using correct vocabulary (e.g., correlation, spread, skew), and improve clarity when communicating reasoning and justifying conclusions. **Pure & Mechanics:** Focus on accurate interpretation of	**Support Their Study Habits** • Encourage a regular, distraction-free revision routine. • Help them stick to their timetable, especially with independent study time. • Encourage breaks, good sleep, and a healthy balance with social time.

		worded problems, use of technical language to describe motion and forces (e.g., acceleration, resultant force), understanding modelling assumptions, and clearly presenting structured mathematical arguments.	
Spring Term	**Pure & Statistics** Graphs & Transformations, Algebraic Methods, Trigonometric Ratio, Trigonometric Identities & Equations, **Pure & Mechanics** Differentiation, Circles, Integration, Variable Acceleration	**Pure & Statistics:** Use accurate mathematical language to describe and explain graph behaviour, algebraic processes, and trigonometric relationships. Develop confidence in interpreting and constructing mathematical arguments involving identities and equations. **Pure & Mechanics:** Focus on precise explanation of rates of change and motion using appropriate terminology (e.g., gradient, tangent, velocity, acceleration). Enhance written clarity when interpreting problems involving calculus and geometric properties such as circles.	**Encourage Active Revision** • Ask them what they're working on — they could explain it out loud, use flashcards, or teach you! • Remind them that maths needs **regular practice** — not just reading notes. • Suggest short bursts of problem-solving over passive revision.
Summer Term	**Pure & Statistics** Binomial Expansion, Statistical Distributions, Hypothesis Testing, Y13 Algebraic Methods, Y13 Binomial Expansion **Pure & Mechanics** Forces & Motion, Y13 Sequences & Series, Y13 Radians	**Pure & Statistics:** Emphasise clear interpretation and communication of statistical contexts, use of precise terminology in hypothesis testing (e.g. null/alternative hypothesis, significance level), and structured reasoning in binomial expansion and algebraic manipulation. **Pure & Mechanics:** Focus on articulating modelling assumptions, describing forces and motion accurately using correct vocabulary (e.g. equilibrium, resultant force), and expressing ideas clearly in sequences, series, and when using radians in contextual problems.	**Promote Use of Resources** • Make sure they know where to find: 1. Past papers and mark schemes for Edexcel. (These are on the St Bernard's VLE) 2. Revision guides or textbooks (CGP)

Helpful books/websites:

Pearson Edexcel Year 1/AS Pure Mathematics Book

Pearson Edexcel Year 1/AS Applied Mathematics Book

Physics & Maths Tutor Website

Opportunities for wider reading/research:

BOOKS TO READ

· **Humble Pi – Matt Parker –** A humorous look at real-world mathematical errors.

· **Alex's Adventures in Numberland – Alex Bellos –** A journey through maths around the world.

· **The Maths of Life and Death – Kit Yates –** How maths affects everything from disease to voting.

· **How to Bake Pi – Eugenia Cheng –** Category theory through the lens of baking.

· **Fermat's Last Theorem – Simon Singh –** A gripping account of a centuries-old problem.

· **The Joy of x – Steven Strogatz –** Accessible essays on maths in everyday life.

· **Weapons of Math Destruction – Cathy O'Neil –** A look at the dark side of data and algorithms.

· **In Pursuit of the Unknown – Ian Stewart –** 17 equations that changed the world.

ARTICLES & BLOGS

· **Plus Magazine –** A free online mathematics magazine from the University of Cambridge.

· **The Conversation (Maths section) –** Academic writing on current maths-related issues.

· **Numberphile Blog –** Short reads on mathematical ideas and curiosities.

PODCASTS TO LISTEN TO

· **A Brief History of Mathematics –** Short BBC podcasts exploring key figures in maths.

· **The Curious Cases of Rutherford & Fry –** Often tackle maths-based questions with fun and depth.

· **The Life Scientific (BBC Radio 4) –** Interviews with top scientists, often including mathematicians.

· **My Favourite Theorem –** Mathematicians share and explain the beauty of their favourite results.

Year 13

In Year 13, students build on their AS knowledge by deepening their understanding of Pure Mathematics, Statistics, and Mechanics, as outlined in the Edexcel A Level Mathematics (Year 2) Pearson textbooks. The course focuses on advanced algebraic techniques, calculus, and applications of mathematics in real-world contexts. Students will explore key topics such as functions and transformations, trigonometric identities, binomial expansion, differentiation and integration techniques, sequences and series, and parametric equations.

In Statistics, the curriculum covers probability distributions, hypothesis testing, and interpretation of statistical results. In Mechanics, students study vectors, kinematics, dynamics, and moments, using mathematical models to solve problems involving motion and forces.

The Year 13 curriculum prepares students for the demands of the full A Level examination, encouraging logical reasoning, precise communication, and problem-solving skills, as well as fluency in mathematical methods and modelling.
Number of lessons per fortnight: 5

Skills developed: Algebraic manipulation and reasoning, advanced calculus (differentiation and integration techniques), problem solving in unfamiliar contexts, mathematical modelling, interpreting statistical data, hypothesis testing, applying vectors in 2D and 3D, working with parametric equations, exponential and logarithmic functions, using trigonometric identities and equations, clear mathematical communication, interpreting mechanics problems (forces, motion, moments), logical sequencing in multi-step problems, effective use of technology (calculators and statistical tools).

Essential equipment: Calculator (Casio FX-991CW Classwiz Advanced Scientific Calculator), Pencil and eraser, Ruler (preferably clear and marked in cm/mm), Protractor, Pair of Compasses

Extracurricular and enrichment opportunities: Become a Mathematics Mentor to support younger students in the main school by assisting them during lessons with activities and contributing to engaging math-related events during Culture Week.

Careers curriculum: Relevant links made throughout the curriculum relevant to topics being learnt.

	Content studied	**Literacy focus**	**What parents can do to help**
Autumn Term	**Pure & Statistics** Algebraic Methods, Binomial Expansion, Radians, Correlation, Regression & Hypothesis Testing, Trigonometric Functions, Trigonometry & Modelling **Pure & Mechanics** Sequences & Series, Functions and Graphs, Projectiles, Differentiation, Moments	**Pure & Statistics** Students will develop confidence in using precise mathematical language when working with algebraic methods, binomial expansion, radians, and trigonometric functions. They will also practise interpreting data and communicating conclusions clearly in topics such as correlation, regression, and hypothesis testing. Emphasis is placed on structuring written explanations, interpreting real-world contexts, and justifying mathematical reasoning. **Pure & Mechanics** Students will strengthen their ability to describe and explain mathematical models using appropriate terminology in sequences and series, functions and graphs, and projectiles. They will articulate reasoning behind methods in differentiation and moments, and interpret	**Encourage Independent Problem-Solving** • If they're stuck, guide them to look things up or ask teachers, rather than giving up. • Help them see that struggle is part of mastering challenging material.

		mathematical results in physical contexts, using clear written explanations and logical structure throughout.	
Spring Term	**Pure & Statistics** Parametric Equations, Conditional Probability, Normal Distribution, Vectors, Numerical Methods **Pure & Mechanics** Further Kinematics, Integration, Application of Forces, Moments (Ladder Problems), Differential Equations	**Pure & Statistics** Students will enhance their use of technical vocabulary to describe and interpret parametric equations, vectors, and numerical methods. They will explain reasoning clearly when solving problems involving conditional probability and the normal distribution, with a focus on structuring arguments, interpreting outcomes, and evaluating the limitations of models. **Pure & Mechanics** Students will practise explaining multi-step processes clearly when applying integration and differential equations in mechanics contexts. They will use appropriate terminology when solving problems involving kinematics, forces, and moments (including ladder problems), and justify the use of mathematical models, assumptions, and real-world interpretations in written responses.	**Reinforce the Importance of Consistency** • Maths builds over time — last year's topics matter. • Remind them to revisit earlier content alongside new topics (using revision checklists or topic maps).
Summer Term	Revision		**Three tips for helping to prepare your child for their final exams.** **#1 Reassure, Don't Pressure** Remind your child that **effort matters more than perfection**. Encourage them to **focus on progress**, not panic about grades. **#2 Help Them Stay Organised** Support them in **making and sticking to a revision plan**. Make sure they have quiet space, equipment, and time to revise. **#3 Be Their Steady Support** Ask how they're doing — and listen. Offer help with breaks, meals, or just being there. Encourage sleep, fresh air, and balance.

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Physics & Maths Tutor Website

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