Mathematics Department
Curriculum – Key Stage 5

Key Stage 5 Curriculum Overview 2025-2027

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
		AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Year 12	Unit description	Algorithms Graphs and Networks Algorithms on Graphs Route Inspection Linear Programming Further Mechanics: Momentum and Impulse	Complex Numbers Argand Diagrams Series Elastic Collisions in 1D (part 1)	Further Algebra and Functions Matrices Linear Transformations Work, Energy and Power	Proof by induction Volumes of revolution Vectors Elastic Collision (part 2)	Critical Path Analysis AS Examination Preparation	A-Level Content: Complex Numbers Pre-teach normal A level maths Pure integration (+differentiation) Algorithms on Graphs Graphs and Networks Route Inspection The Travelling Salesman Problem Elastic Strings and Springs (part 1)
	Assessment	Baseline Assessment Assessment 1 Further Pure Regular Homework Consolidation Tasks/Exam Questions	Assessment 2 Further Pure Regular Homework Consolidation Tasks/Exam Questions	Regular Homework Consolidation Tasks/Exam Questions	Further Mock Regular Homework Consolidation Tasks/Exam Questions	AS Maths Exam Regular Homework Consolidation Tasks/Exam Questions	Regular Homework Consolidation Tasks/Exam Questions
	Challenge	Senior Maths Challenge. Use of Challenge Questions in the textbook. All students will be taught the content but should challenge themselves to complete all exercises from the book, particularly the exam style and challenge questions.					
	Inclusion	Identified students will be given a range of support, including small group intervention, Maths Help, additional resources purchased.					

Key Stage 5 Curriculum Overview 2025-2027

		Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
		AUTUMN 1	AUTUMN 2	SPRING 1	SPRING 2	SUMMER 1	SUMMER 2
Year 13	Unit description	A Level Core Pure Content: Continue to pre-teach normal A level maths Pure integration (+differentiation) Series Volumes of revolution Elastic Collisions in 2D (part 1)	Methods in differential equations Modelling with differential equations Elastic Strings and Springs (part 2) Critical Path Analysis	Methods in Calculus Hyperbolic Functions Elastic Collisions in 2D (part 2) The Simplex Algorithm	Polar Coordinates	Structured Revision: - Topic reviews based on mock QLA and frequency of topics - Examination paper practice *Possible Year 13 Additional Mock exam and final preparation* Year 13 Exam Dates: Core Pure 1: Core Pure 2: Mechanics: Decision:	
	Assessment	Assessment 1 Further Pure Retrieval Tasks Regular Homework Consolidation Tasks/Exam Questions	Assessment 2 Further Applied Retrieval Tasks Regular Homework Consolidation Tasks/Exam Questions	Mock Exams Retrieval Tasks Regular Homework Consolidation Tasks/Exam Questions	2nd Mock Exams in lessons Past Exam Papers	Possible Year 13 Additional Mock exam	
	Challenge	Senior Maths Challenge. Use of Challenge Questions in the textbook. All students will be taught the content but should challenge themselves to complete all exercises from the book, particularly the exam style and challenge questions.					
	Inclusion/ Catch Up	Identified students will be given a range of support, including small group intervention, Maths Help, additional resources purchased.					

>Something More?

Curriculums at BSS are designed to nurture not only intellectual and physical development but also the spiritual growth of students. This will be through:

Encouraging students to reflect on their experiences, beliefs and purpose and to contemplate the big Questions of Who am I? Why am I here? What is my purpose?

Highlighting extraordinary people, events, and discoveries that inspire awe or investigates how a sense of awe has led to breakthroughs and creativity.

Using art, music, literature, and nature to inspire awe, wonder, and spiritual insight.

Encouraging creative expression to connect with the inner self and the transcendent.

Fostering a sense of belonging and interconnectedness with others, nature, and the universe.

Encouraging self-awareness, emotional intelligence, and moral reasoning.

Promoting open-ended investigations rather than just seeking right answers.

Using hands-on activities, field trips and experiments to immerse students in learning and evoke wonder.

How does our curriculum do >Something More?

1. Faith in Mathematical Order, Wonder, and Human Potential

The curriculum nurtures a form of intellectual and spiritual faith by revealing the deep order and coherence within mathematics. Through the study of sequences, index laws, prime numbers, and structures like Pascal's triangle and fractals, students encounter patterns that mirror the elegance and intricacy of the natural world. Exploring infinite number sets and the recurrence of mathematical forms in nature fosters a sense of awe and wonder, suggesting an underlying unity in the universe. The emphasis on abstract thinking and problem-solving builds confidence in the human capacity to reason and discover, while the construction of rigorous proofs—such as those involving irrational numbers or Fibonacci relationships—can feel like uncovering timeless truths. This journey through mathematical thinking cultivates a reverent appreciation for the power of logic and the beauty of intellectual discovery.

2. Truth, Justice, and Responsibility Through Ethical Reasoning and Real-World Application

Mathematics is a discipline grounded in truth, and the curriculum emphasizes this through logical reasoning, exact calculation, and the interpretation of universal principles. Students engage in formal proof techniques, explore the properties of number systems, and interpret complex functions, all of which reinforce the pursuit of objective truth. Simultaneously, the curriculum promotes justice and responsibility by teaching students to represent data fairly, recognize misleading information, and critically evaluate statistical claims. Topics such as financial literacy, risk analysis, and resource optimization empower students to make informed, ethical decisions. They also learn to critique data collection methods and understand the limitations of mathematical models, fostering intellectual humility and accountability. This integration of truth-seeking with ethical application prepares students to use mathematics as a force for fairness and integrity in the wider world.

3. Compassion Through Understanding Human and Societal Realities

Though often seen as abstract, mathematics becomes a tool for compassion when applied to real-world contexts that reflect human experiences. The curriculum encourages students to analyse population pyramids, birth and death rates, and standardized rates of change—offering insights into demographic trends and societal challenges. By interpreting graphs related to speed, health, and economic activity, and solving problems involving compound measures, students begin to see the human stories behind the data. Mathematical modelling of natural and societal phenomena—such as tides, sunlight, population growth, and decay—connects abstract

concepts to lived realities. These experiences help students develop empathy and a deeper understanding of the world around them, encouraging a thoughtful, compassionate engagement with the issues that shape communities and lives.

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