## MATHEMATICS

KS3

## KS4 Foundation / KS4 Higher

KS5

## Key Stage 3

The national curriculum for Mathematics aims to ensure that all pupils:

- become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately
- reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language
- can solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including breaking down problems into a series of simpler steps and persevering in seeking solutions

In Key Stage 3 Mathematics, students are encouraged to use the correct Mathematical vocabulary, which enables them to articulate their understanding and reasoning accurately.

Reasoning and Problem-Solving is an integral part of students' Mathematical learning as they apply knowledge consistently within unfamiliar contexts.

Key Stage 4	
Subject	Mathematics
Qualification	GCSE
Exam Board	AQA
Course Leader	Mrs Patrick
Course summary	GCSE Maths is a comprehensive course that covers a wide range of mathematical concepts, including Number, Algebra, Ratio, proportion and rates of change, Geometry and measures, Probability, and Statistics. Students learn how to apply Mathematical principles to real-world problems and develop their critical thinking and problem-solving skills. The course is completed over two years of study.
What will students learn?	One of the key concepts covered in the GCSE Maths course is Algebra. This includes topics such as Solving Equations, Graphing functions, and working with algebraic expressions. Students also learn about Geometry, which involves working with shapes and spatial relationships. This includes



	Calculating the Area and Perimeter of different shapes, as well as understanding concepts such as congruence and similarity.
	In addition, Trigonometry consists of working with Triangles and Circular functions, and is often used in fields such as Construction, Engineering and Physics.
How will students be	GCSE Mathematics has a Foundation tier (grades $1 - 5$ ) and a Higher tier (grades $4 - 9$ ). Students take three question papers at the same tier. All question papers are taken in the same series
assessed?	Each paper consists of: written exam: 1 hour 30 minutes 80 marks
	33 <sup>1</sup> /₃% of the GCSE Mathematics assessment

Key Stage 5		
Subject	Mathematics	
Qualification	GCE- AS or A Level	
Exam Board	Pearson, Edexcel	
Course Leader	Mrs Patrick	
Course summary	<ul> <li>Mathematics is a subject which combines well with both Arts and Science subjects. It is highly valued by universities and colleges and can provide students with skills that are invaluable to a whole range of other disciplines. It can also be fun and rewarding in its own right!</li> <li>In this course we will aim to: <ul> <li>Develop your confidence in solving mathematical problems and help you enjoy mathematics.</li> <li>Help you develop strategies to construct proofs</li> <li>Show you how to extend your range of mathematical skills and techniques</li> <li>Show how different areas of mathematics are connected</li> <li>Develop strategies to solve "real world" problems</li> <li>Help you use mathematics to as an effective means of communication</li> <li>Master the ability to read mathematical articles</li> <li>Show how mathematics links to other subject areas</li> <li>Help you become an independent learner.</li> </ul> </li> </ul>	
What will students	Proof	
learne	PTOOL	

	Differentiation	Statistical Distributions
	Integration	Hypothesis Testing
	Algebra and functions	Probability
	Coordinate Geometry	Statistical Sampling
	Sequences and Series Trigonometry Exponentials and Logarithms Numerical Methods	Vector quantities and units in Mechanics Kinematics Forces and Newton's Laws Moments
How will students be assessed?	A Level is assessed by two 2 he paper consisting of statistics and contain a mixture of single and r the A level.	our papers incorporating pure maths and one 2 hour mechanics. Each paper will constitute 100 marks and multi-step questions. Each paper will constitute 1/3 of

Key Stage 5		
Subject	Further Mathematics	
Qualification	GCE- AS or A Level	
Exam Board	Pearson, Edexcel	
Course Leader	Mrs Patrick	
Course summary	<ul> <li>Further Maths is an extension to Mathematics and serves those more able students. It is appropriate for those students who have achieved an A or A* at GCSE and a genuine love for mathematics.</li> <li>In this course we will aim to:</li> <li>Broaden your range of mathematical skills and techniques</li> <li>Show how different areas of mathematics are connected</li> <li>Help you to become confident and extend your mathematical skills and techniques.</li> </ul>	
	<ul> <li>Help you use mathematics to as an effective means of communication</li> <li>Use mathematical reasoning to draw inferences.</li> <li>Solve challenging problems</li> <li>Help you become an independent learner.</li> </ul>	
What will students learn?	AS content	The content will consist of Pure and applied mathematics. Pure Mathematics is compulsory and will assess: Proof

		Complex Numbers
		Matrices
		Further Calculus
		Further Vectors
		Polar Coordinates
		Hyperbolic Functions
		Students will then choose a
		combination of 2 modules from:
		Statistics, Mechanics or Discrete
		Mathematics
		This includes all of the AS content
	A Level content	but studied to a greater depth. Plus:
		Differential Equations
		Further Trigonometry
		Further Co-ordinate geometry
		At AS there will be 2 papers worth
		50% of the exam each. They will be a
How will students be assessed?	AS	mixture of short and multi-step
		problems. Each exam will last 1.5
		hours.
	A Level	A Level is assessed by three 1.5 hour
		papers and each paper is 1/3 of the A
		level. Two papers will be devoted to
		the core pure maths and one paper to
		the optional modules.

Key Stage 5	
Subject	Core Mathematics
Qualification	Certificate Level 3 Mathematical Studies
Exam Board	AQA
Course Leader	Mr Loftus
Course summary	Mathematics is, inherently, a sequential subject. There is a progression of material through all levels at which the subject is studied. It is assumed that students will already have confidence and competence in the content presented in standard type within the GCSE mathematics criteria. Students will make use of elements of this content when addressing problems within this Level 3 Certificate Mathematical Studies specification but this is not explicitly set out in subject content. This Level 3 Certificate Mathematical Studies specification aims to build on the knowledge, understanding and skills established in GCSE mathematics.

	A course of study leading to this qualification should enable students to:
	<ul> <li>study a mathematics curriculum that is integrated with other areas of their study, work or interest leading to the application of mathematics in these areas</li> <li>develop mathematical modelling, evaluating and reasoning skills</li> <li>solve problems some of which will not be well defined and may not have a unique solution</li> <li>solve substantial and real life problems encountered by adults</li> <li>use ICT as an exploratory tool for developing mathematical understanding and when solving problems</li> <li>develop skills in the communication, selection, use and interpretation of their mathematics</li> <li>enjoy mathematics and develop confidence in using mathematics</li> </ul>
What will students learn?	Analysis of data Maths for personal finance Estimation Critical analysis of given data and models (including spreadsheets and tabular data) The normal distribution Probabilities and estimation Correlation and regression Critical path analysis Expectation Cost benefit analysis Graphical methods Rates of change Exponential functions
How will students be assessed?	Paper 1 written exam: 1 hour 30 minutes 60 marks scientific calculator or graphics calculator allowed AND
	Paper 2 written exam: 1 hour 30 minutes 60 marks scientific calculator or graphics calculator allowed (