



Thomas Mills
High School & Sixth Form

CURRICULUM OVERVIEW: Mathematics

At Thomas Mills, our Key Stage 4 Mathematics curriculum is designed to equip pupils with the knowledge, skills, and confidence required to succeed in their GCSE examinations and beyond. We aim to develop mathematically fluent, logical, and independent learners who can apply their understanding to solve problems in both familiar and unfamiliar contexts.

Our intent is for all KS4 pupils to:

- **Master key mathematical concepts and techniques** with accuracy and efficiency, ensuring strong fluency across all areas of the GCSE syllabus.
- **Develop sophisticated mathematical reasoning** by constructing clear, logical arguments and critically evaluating mathematical information.
- **Apply their mathematics confidently to solve complex problems**, demonstrating creativity, perseverance, and the ability to interpret and model real-world situations.

The KS4 curriculum is structured to build on prior knowledge from KS3, consolidating and extending skills with increasing challenge. It provides a balanced approach between procedural fluency, conceptual understanding and problem solving, ensuring pupils are well-prepared for both foundation and higher-tier GCSE examinations.

We strive to foster a positive and resilient mindset by:

- Emphasizing the relevance of mathematics in everyday life, higher education, and careers.
- Encouraging independent learning, self-reflection, and continuous improvement.
- Providing targeted support and stretch opportunities to meet the needs of all learners.

By the end of Key Stage 4, pupils will be confident, competent mathematicians ready to progress to further study or employment, equipped with the mathematical skills essential for success in the modern world.

Year 9

Term	Topic	Knowledge and Skills	Useful Links
1	Unit 1 – basic number	Knowledge and Skills: Pupils will learn:	



		• how to compare and order positive and negative numbers • how to use the order of operations when calculating • how to add, subtract, multiply and divide positive and negative integers and positive decimals without a calculator.	https://www.thenational.academy/teachers/programmes/maths-secondary-ks4-foundation-1/units/4-rules-of-number-0da4/lessons/four-operations-cthkjc https://www.bbc.co.uk/bitesize/guides/z3kmpbk/revision/5
	Unit 2 – Geometry and measures: Measures and scale drawing	• how to convert from one metric unit to another • how to convert from one imperial unit to another • how to convert from imperial units to metric units • how to read and draw scale drawings • how to read map scales • how to draw nets of 3D shapes and identify 3D shapes from their nets • how to draw plans and elevations	2D and 3D shape: compound shapes KS4 Y10 Maths Lesson Resources Oak National Academy Checking and securing understanding of nets of solids Foundation KS4 Y11 Maths Lesson Resources Oak National Academy Geometry and measure - GCSE Maths - BBC Bitesize
	Unit 3 – Statistics: Charts, tables and averages	• how to use tally charts and frequency tables to collect and organise data • how to represent data on various types of diagram • how to draw a line graph to show trends in data • how to work out the mode, median, mean and range of small sets of data • how to decide which is the best average to use • how to use an average and the range to compare sets of data	Find the mean, median, mode and range from a list of numbers Foundation KS4 Y11 Maths Lesson Resources Oak National Academy Checking understanding of summary statistics from a list Foundation KS4 Y10 Maths Lesson Resources Oak National Academy Mean - Analysing data - Edexcel - GCSE Maths Revision - Edexcel - BBC Bitesize



	Unit 4 – Geometry and measures: Angles	• how to calculate angles on a line and around a point • how to calculate angles in a triangle and in any polygon • how to calculate angles in parallel lines • how to calculate interior and exterior angles in polygons • how to use bearings	Problem solving with angles Foundation KS4 Y10 Maths Lesson Resources Oak National Academy Revise - Angles, Polygons, Bearings KS4 Y11 Maths Lesson Resources Oak National Academy Types of angle - Angles, lines and polygons - AQA - GCSE Maths Revision - AQA - BBC Bitesize
Assessments		At the end of each unit, pupils will complete a written assessment designed to evaluate their understanding of the key concepts, methods and problem-solving skills covered throughout the unit. These assessments provide an opportunity for pupils to demonstrate their mathematical thinking, fluency and application of knowledge in a range of contexts.	
2	Unit 5 – Number properties	Knowledge and Skills: Pupils will learn: • how to find multiples and factors • what prime numbers are • how to break a number down into its prime factors • how to work out the lowest common multiple of two numbers • how to work out the highest common factor of two numbers • how to work out squares and square roots • how to use a calculator for basic calculations	HCF and LCM KS4 Y10 Maths Lesson Resources Oak National Academy https://www.bbc.co.uk/bitesize/guides/z9hb97h/revision/5



	Unit 6 – Number: Approximation	• how to round a number to a given accuracy • how to estimate the answer to calculations by rounding • how to find the limits of numbers rounded to a given accuracy • how to work out the error interval due to rounding or truncation	Rounding, estimation and bounds KS4 Y10 Maths Lesson Resources Oak National Academy Checking and securing understanding of rounding and truncating Foundation KS4 Y10 Maths Lesson Resources Oak National Academy
	Unit 7 – Number: Decimals and fractions	• how to multiply and divide decimals • how to convert between rational numbers, fractions and decimals • how to find reciprocals of numbers and fractions • how to work out one quantity as a fraction of another • how to add, subtract, multiply and divide fractions, with and without a calculator	Checking and securing understanding of calculating with fractions and decimals Foundation KS4 Y10 Maths Lesson Resources Oak National Academy Fraction arithmetic - Fractions - Edexcel - GCSE Maths Revision - Edexcel - BBC Bitesize
	Unit 8 – Algebra: Linear graphs	• how to plot negative coordinates • how to work out the gradient of a line • how to draw a straight-line graph from its equation • how to work out the equation of a linear graph • how to draw linear graphs parallel to other lines • how to read information from a conversion graph • how to use graphs to work out formulae and solve simultaneous linear equations	Linear graphs KS4 Y10 Maths Lesson Resources Oak National Academy Problem solving with linear graphs Foundation KS4 Y10 Maths Lesson Resources Oak National Academy How to find the gradient of a straight line in maths - BBC Bitesize



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3	Unit 9 – Algebra: Expressions and formulae	Knowledge and Skills: Pupils will learn: • how to use letters to represent numbers • how to form simple algebraic expressions • how to simplify expressions by collecting like terms • how to substitute numbers into expressions and formulae • how to expand and factorise expressions • how to expand two pairs of brackets • how to factorise quadratic expressions • how to rearrange formulae	Factorising a quadratic expression Foundation KS4 Y10 Maths Lesson Resources Oak National Academy Expressions - Algebraic expressions - Edexcel - GCSE Maths Revision - Edexcel - BBC Bitesize
	Unit 10 – Ratio, proportion and rates of change: Ratio, speed and proportion		Ratio KS4 Y10 Maths Lesson Resources Oak National Academy Equivalent ratios and simplifying ratios - BBC Bitesize Working with proportion - BBC Bitesize
	Unit 11 – Geometry and measure		Find the Area of a Circle Foundation KS4 Y10 Maths Lesson Resources Oak National Academy Lesson: Circumference of a circle Oak National Academy



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			Shape, space and measures - BBC Bitesize
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