

Maths Department



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Key Stage 3

Our key stage 3 mathematics programme has been designed by experienced teachers to ensure mastery mathematics is achieved at all abilities. The key stage 3 scheme of work has been designed to stretch and challenge students with depth of understanding rather than teaching a breadth of topics. This ensures students have clear and precise understanding of number, algebra, data and geometry to prepare them for the new GCSE Specification. Through the use of key progress indicators (KPI's) and termly summative assessments, teachers are able to track and monitor student's progress and attainment through highly informative data and question level analysis. The data informs teachers of gaps in learning, which is used to plan highly effective lessons to close gaps and attain mastery for each student.

Home learning is a very important aspect of mathematics at North Oxfordshire Academy. Through the use of the online maths resource, [hegartymaths](#), teachers can set, track and analyse how each student is performing on each topic within mathematics. Home learning is set in-line with the scheme of work to ensure students are practising and embedding methods and process at home, as well as in school. This will guarantee maximum progress in maths for every student.

Year 7 Scheme of Work

Key Progress Indicator	Topic
7.01	Place value and Number sense
7.02	Addition and Subtraction
7.03	Perimeter
7.04	Rounding & Estimation (in real life situations)
7.05	Multiplication and Division
7.06	Factors and Multiples
7.07	Area of rectangles and triangles and parallelograms
7.08	Fractions as part of a whole
7.09	Fractions as a value
7.10	Fractions as an operation
7.11	Order of operations
7.12	Basic rules of algebra
7.13	Expand and factorise
7.14	Substitution
7.15	Angles
7.16	Polygons
7.17	Symmetry and reflection
7.18	Coordinates
7.19	Mean
7.20	Two way tables & Venn diagrams

Year 8 Scheme of Work

Key Progress Indicator	Topic
8.01	Indices
8.02	Prime Factorisation
8.03	Rounding
8.04	Fractions
8.05	Percentages revision
8.06	Linear equations
8.07	Coordinates and basic graphs
8.08	Units of measurement
8.09	Angles
8.10	Circumference
8.11	Proportional reasoning
8.12	Fractions, decimals and percentages
8.13	Ratio
8.14	Area of composite shapes
8.15	Presenting and interpreting data
8.16	Averages
8.17	Two way tables
8.18	3-D visualisation
8.19	Volume

Key Stage 4

Key Stage 4 mathematics at North Oxfordshire Academy follows the New Edexcel GCSE, 3 year course, Year 9 through to Year 11. The new maths specification is more demanding than ever for students across the UK, but at North Oxfordshire Academy we thrive at the challenge. The three year course allows teachers to deliver excellent lessons; that investigate the concepts of maths to the nth degree; this supports the depth of understanding and problem solving skills in every student. Like the Key Stage 3 Scheme of Work, year 9, 10 and 11 have KPI assessments that allow teachers to constantly monitor student's progress to ensure each student is making maximum progress. The data produced by these KPI assessments, as well as summative assessments, then allows teachers to adapt teaching as necessary to ensure no student is left behind.

Edexcel Mathematics has two tiers of entry Higher and Foundation. Studying the higher GCSE course means you can achieve a Grade 3 to a Grade 9, (Grade 9 being the highest), whilst the foundation course allows you to achieve a Grade 1 to Grade 5. At North Oxfordshire Academy, the Scheme of Work has been designed to allow students to study necessary work for both tiers until Christmas of Year 10. At this point the students are set on ability and the lesson become bespoke for the ability of each class. The final GCSE assessment is based on 3 papers each out of 80 marks (totalling 240 marks), for each tier.

Foundation Scheme of Work

Year 9 Foundation					
Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Place value & Number Properties	FDP	Notation	Linear Equations	Properties of shapes	Sequences
4 Rules - Decimals	Fractions	Simplifying & Index Laws	Linear Inequalities	Angle facts	Basic vectors
Indices Powers & Roots	Percentages	Expanding & Factorising	Perimeter & Area	Parallel lines	
Factors, Multiples & Primes	Proportion	Expressions & Substitution	Pythagoras	Circles	
Ratio (basic)				Volume & Surface Area	
Year 10 Foundation					
Half Term 7	Half Term 8	Half Term 9	Half Term 10	Half Term 11	Half Term 12
Linear Graphs	Rearrange formulae	Probability	Simple interest	Statistics	Plans & elevations
$y = mx + c$	Linear Simultaneous Equations	Standard Form	Ratio (further)		Constructions & Loci
Compound Measures	Further graphs		Growth & Decay		
Quadratic graphs, TP and roots					
Year 11 Foundation					
Half Term 13	Half Term 14	Half Term 15	Half Term 16	Half Term 17	Half Term 18
Pythagoras	Algebra Review	Transformations	Number review	Revision	Revision
Right angled Trigonometry		Congruence			
Bearings & Scale Drawings		Vectors			
		Similar shapes			

Higher Scheme of Work

Year 9 Higher					
Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Place value & Number Properties	FDP	Notation	Linear Equations	Properties of shapes	Sequences
4 Rules - Decimals	Fractions	Simplifying & Index Laws	Linear Inequalities	Angle facts	Basic vectors
Indices Powers & Roots	Percentages	Expanding & Factorising	Perimeter & Area	Parallel lines	
Factors, Multiples & Primes	Proportion	Expressions & Substitution	Pythagoras	Circles	
Ratio (basic)				Volume & Surface Area	
Year 10 Higher					
Half Term 7	Half Term 8	Half Term 9	Half Term 10	Half Term 11	Half Term 12
Linear Graphs	Rearrange formulae	Probability	Surds	Statistics - no higher	Right angled Trigonometry
$y = mx + c$	Further expanding & factorising	Capture & Recapture	Recurring decimals	Simple interest	Plans & elevations
Compound Measures	Linear Simultaneous Equations	Standard Form	Bounds	Ratio (further)	Constructions & Loci
Quadratic graphs, TP and roots	Further graphs	Proportion (further)	Growth & Decay		Similar shapes
Year 11 Higher					
Half Term 13	Half Term 14	Half Term 15	Half Term 16	Half Term 17	Half Term 18
Algebraic proof	Bearings	Statistics (Further)	Gradients (Further), and area under a graph	Revision	Revision
Solving quadratics & further Simultaneous equations	Circle theorems	Transformations	Kinematics		
Functions	Further Trigonometry & Trigonometric graphs	Congruence	Graphical transformations		
Iteration		Vectors			
Quadratic inequalities					

Key Stage 5

A-Level Maths

In the Maths A Level, students will develop their mathematical thinking and understanding. They will discover a range of skills and techniques that will enable them to cultivate their reasoning abilities in order to communicate their decisions with clarity. Maths is a powerful tool in problem solving and logic, and the main aim of the teaching is for students to be able to analyse a situation in context and use mathematical modelling to solve and interpret their solution.

What you will study on the course

The Maths A Level consists of three components – Pure, Statistics and Mechanics. The content consists of the following topics:

Pure

Statistics

Mechanics

- Proof
- Algebra and functions
- Coordinate geometry in the (x, y) plane
- Sequences and series
- Trigonometry
- Exponentials and logarithms
- Differentiation
- Integration
- Numerical methods
- Vectors
- Statistical sampling
- Data presentation and interpretation
- Probability
- Statistical distributions
- Statistical hypothesis testing
- Quantities and units in mechanics
- Kinematics
- Forces and Newton's laws
- Moments

Home learning and independent study expectations

You will be expected to complete 2 pieces of home learning each week, each taking a minimum of 60 minutes to complete.

Exam board

The Maths course will use the Edexcel exam board.

Requirements

You will need at least a grade 7 in GCSE Maths to study Maths at A Level.

Maths year 1

Students will sit 2 papers at the end of the academic year:

- Pure

2 hour exam, worth 62.5% of the qualification, worth 100 marks

- Statistics and Mechanics

1 hour 15 min exam, worth 37.5% of the qualification, worth 60 marks

The students will gain an AS Level at the end of the first year. This result does not contribute to the A Level grade – the Maths A Level is assessed using separate papers sat at the end of the second year.

Maths year 2

Students will sit 3 papers at the end of the academic year:

- Pure

- Two 2 hour exams, each worth 33% of the qualification, each worth 100 marks
- Statistics and Mechanics

2 hour exam, worth 33% of the qualification, worth 100 marks

The full Maths A Level only takes into account the papers sat at the end of the second year and cover all of the content from year 1 **and** year 2. The papers sat at the end of year 1 do not contribute to the A Level grade.

Further Maths

The Further Maths A Level is designed to build on the skills, knowledge and understanding seen in the Maths A Level. Although a greater depth of mathematical ability is required to succeed in this A Level, students that choose it will be rewarded with a richer understanding of the subject, and will be able to draw links across different areas of Maths. Two modules have been chosen from a range of options in order for students to see the wider impact of Maths in the real world. Further Pure develops the skills seen in the only staple module (Core Pure), whilst Decision has many links to Computer Science and programming.

Any student considering studying Maths at university is strongly recommended to take the Further Maths A Level.

What you will study on the course

The Further Maths A Level consists of three components – Core Pure, and two options, Further Pure and Decision. The content consists of the following topics:

Core Pure

- Proof
- Complex numbers
- Matrices
- Further algebra and functions
- Further calculus
- Further vectors
- Polar coordinates
- Hyperbolic functions
- Differential equations

Further Pure

- Further trigonometry
- Further calculus
- Further differential equations
- Coordinate systems
- Further vectors
- Further numerical methods
- Inequalities

Decision

- Algorithms and graph theory
- Algorithms on graphs
- Critical path analysis
- Linear programming

Home learning and independent study expectations

You will be expected to complete 2 pieces of home learning each week, each taking a minimum of 60 minutes to complete.

Exam board

The Further Maths course will use the Edexcel exam board.

Requirements

You will need a grade 9 in GCSE Maths to study Further Maths at A Level.

Further Maths year 1

Students will sit 2 papers at the end of the academic year:

- Core Pure

1 hour 40 min exam, worth 50% of the qualification, worth 80 marks

- Options – Further Pure and Decision

1 hour 40 min exam, worth 50% of the qualification, worth 80 marks

The students will gain an AS Level at the end of the first year. This result does not contribute to the A Level grade – the Further Maths A Level is assessed using separate papers sat at the end of the second year.

Further Maths year 2

Students will sit 4 papers at the end of the academic year:

- Core Pure

Two 1 hour 30 min exams, each worth 25% of the qualification, each worth 80 marks

- Options – Further Pure and Decision

Two 1 hour 30 min exams, each worth 25% of the qualification, each worth 80 marks

The full Further Maths A Level only takes into account the papers sat at the end of the second year and cover all of the content from year 1 **and** year 2. The papers sat at the end