



MATHEMATICS DEPARTMENT

Curriculum Overview



The curriculum of the school reflects the demands of the National Curriculum. It is designed in order to provide all pupils with a broad, balanced education relevant to their needs both now and in the future.

Departmental Overview

The Mathematics Department is comprised of thirteen teachers and is located over three floors of the Derby Building. Each classroom has an interactive whiteboard and the department has access to two class sets of laptops and two class sets of iPads. This technology provides support for the pupils with their classwork and enables them to learn independently. Using these, pupils can make use of the apps and online support provided for them by the department.

Departmental Staff

Miss T Holmes	Acting Head of Mathematics
Mrs D Hennigan	Head of KS4 Mathematics
Mrs E Rice	Head of KS3 Mathematics
Mr H Handhill	Mathematics Teacher/Numeracy Coordinator
Miss J Holmes	Mathematics Teacher
Mr M Donga	Mathematics Teacher
Mr S Donohue	Mathematics Teacher
Miss M Haslam	Mathematics Teacher
Miss K Rossiter	Mathematics Teacher
Mrs L Morgan	Mathematics Teacher
Mr C Slater	Mathematics and Science Teacher
Mrs D Cook	Mathematics and ICT Teacher
Mrs S Wilkinson	SLT Line Manager

Year 7 Mathematics (KS3)

Examination/Specification Board

Pearson/Edexcel

Curriculum Overview

	<u>Term 1</u>	<u>Term 2</u>	<u>Term 3</u>
Pi	<ul style="list-style-type: none">➤ Year 7 intervention scheme of work based on RAG analysis of baseline assessment.➤ Analysis and displaying data➤ Calculating	Pi <ul style="list-style-type: none">➤ Expressions, functions and formula➤ Graphs➤ Factor and multiples➤ Decimals and measure	Pi <ul style="list-style-type: none">➤ Angles and lines➤ Measuring and shapes➤ Fractions, decimals and percentages➤ Transformations
Theta	<ul style="list-style-type: none">➤ Year 7 intervention scheme of work based on RAG analysis of baseline assessment.➤ Analysis and displaying data➤ Number skills	Theta <ul style="list-style-type: none">➤ Expressions, functions and formula➤ Decimals and measure➤ Fractions➤ Probability	Theta <ul style="list-style-type: none">➤ Ratio and proportion➤ Lines and angles➤ Sequences and graphs➤ Transformations
Delta	<ul style="list-style-type: none">➤ Year 7 intervention scheme of work based on RAG analysis of baseline assessment.➤ Analysis and displaying data➤ Number skills	Delta <ul style="list-style-type: none">➤ Expressions, functions and formula➤ Fractions➤ Angles and shapes➤ Decimals	Delta <ul style="list-style-type: none">➤ Equations➤ Multiplicative reasoning➤ Perimeter, area and volume➤ Sequences and graphs

In Year 7 pupils follow objectives from the new National Curriculum. Pupils are encouraged to build on their knowledge from Key Stage 2, developing their mathematical thinking and preparing them for the GCSE examinations. Pupils are taught to justify their methods and explain their reasoning ensuring they become resilient and independent problem solvers.

Examinations/Key Assessments

Following a baseline assessment at the start of the year, regular assessment takes place during lessons and a more formal assessment is given once each term to track a pupil's progress. Classwork will be marked in detail by the class teacher, informing pupils of how they are doing, highlighting areas of weakness and strength. Pupils are also taught to mark their own work and the work of their peers. This allows pupils to understand how their work is assessed and how it can be improved.

Homework

This is set once a week and is designed to support the work done during lessons. The task will be detailed on *Show My Homework*, so that pupils and their parents can easily access the work and deadlines. As it is school policy to set homework, a detention will be issued and/or a letter sent home if they are not completed regularly. Prior to assessment periods, pupils may receive an increased volume of homework or independent study work. This will help them to prepare for exam revision in the future. Homework may be set online using *MyMaths* or *MathsWatch* websites. This provides support and immediate feedback on the work you have done and allows the class teacher to keep a record of a pupil's progress.

How Parents can Help

- Check *Show My Homework* regularly and ensure all work is completed to a good standard.
- Ensure that basic equipment is brought to each lesson. A pen, pencil and ruler are the minimum requirements.
- Encourage the use of the Internet for homework completion and revision (see useful websites list).
- Talk about the Mathematics that your child is studying and in the world around them. Encourage the use of the correct terms and language (see parent booklet on school website).
- Ensure pupils revise for assessment tests.

Year 8 Mathematics (KS3)

Examination/Specification Board

Pearson/Edexcel

Curriculum Overview

	<u>Term 1</u>	<u>Term 2</u>	<u>Term 3</u>
Pi	<ul style="list-style-type: none">➤ Number Properties and Calculations➤ Shapes and Measures in 3D➤ Statistics➤ Expressions and Equations	Pi <ul style="list-style-type: none">➤ Decimal Calculations➤ Angles➤ Number Properties➤ Sequences	Pi <ul style="list-style-type: none">➤ Fractions and Percentages➤ Probability➤ Number Calculations➤ Fractions, Decimals and Percentages
Theta	<ul style="list-style-type: none">➤ Number➤ Area and Volume➤ Expressions and Equations➤ Real-life Graphs	Theta <ul style="list-style-type: none">➤ Real-life Graphs➤ Decimals and Ratio➤ Lines and Angles➤ Calculating with Fractions	Theta <ul style="list-style-type: none">➤ Straight-line Graphs➤ Percentages, Decimals and Fractions➤ Statistics, Graphs and Charts
Delta	<ul style="list-style-type: none">➤ Factors and Powers➤ Working with Powers➤ 2D Shapes and 3D Solids➤ Real-life Graphs	Delta <ul style="list-style-type: none">➤ Real-life Graphs➤ Transformations➤ Fractions, Decimals and Percentages➤ Constructions and Loci	Delta <ul style="list-style-type: none">➤ Probability➤ Scale Drawings and Measures➤ Graphs

In Year 8 pupils follow objectives from the new National Curriculum. Pupils are encouraged to build on their knowledge from Key Stage 2 and year 7, developing their mathematical thinking and preparing them for the GCSE examinations. Pupils are taught to justify their methods and explain their reasoning ensuring they become resilient and independent problem solvers.

Examinations/Key Assessments

Regular assessment takes place during lessons and a more formal assessment will be given once each term to track a pupil's progress throughout the year. Classwork will be marked in detail by the class teacher, informing pupils of how they are doing, highlighting areas of weakness and strength. Pupils are also taught to mark their own work and the work of their peers. This allows pupils to understand how their work is assessed and how it can be improved.

Homework

This is set once a week and is designed to support the work done during lessons. The task will be detailed on *Show My Homework*, so that pupils and their parents can easily access the work and deadlines. As it is school policy to set homework, a detention will be issued and/or a letter sent home if they are not completed regularly. Prior to assessment periods, pupils may receive an increased volume of homework or independent study work. This will help them to prepare for exam revision in the future. Homework may be set online using *MyMaths* or *MathsWatch* websites. This provides support and immediate feedback on the work you have done and allows the class teacher to keep a record of a pupil's progress.

How Parents can Help

- Check *Show My Homework* regularly and ensure all work is completed to a good standard.
- Ensure that basic equipment is brought to each lesson. A pen, pencil and ruler are the minimum requirements.
- Encourage the use of the Internet for homework completion and revision (see useful websites list).
- Talk about the Mathematics that your child is studying and in the world around them. Encourage the use of the correct terms and language (see parent booklet on school website).
- Ensure pupils revise for assessment tests.

Year 9 Mathematics (KS4)

Examination/Specification Board

Edexcel

Curriculum Overview

A GCSE in Mathematics is valued not only by institutions of further education and sixth form colleges, but by a wide variety of employers and providers of vocational training. A grasp of mathematical concepts and an ability to solve problems and think logically are vital to everyday life, as well as improving your employability.

<u>Higher 1</u>		<u>Higher 2</u>		<u>Foundation 1</u>		<u>Foundation 2</u>	
Term 1	<ul style="list-style-type: none"> ➤ Number: Powers, Roots, Indices and Surds ➤ Expressions, Formulae and Proof ➤ Data: Averages and Range ➤ Fractions, Percentages, Ratio and Proportion 	Term 1	<ul style="list-style-type: none"> ➤ Number: Calculations, Checking and Rounding ➤ Indices, Roots, Factors and Multiples, Standard Form and Surds ➤ Algebra: Setting up, Rearranging and Solving Equations, Sequences 	Term 1	<ul style="list-style-type: none"> ➤ Number: Powers and Decimals, HCF and LCM, Roots and Rounding ➤ Algebra: Expressions, Expanding and Factorising ➤ Drawing and Interpreting Graphs, Tables and Charts ➤ Fractions and Percentages 	Term 1	<ul style="list-style-type: none"> ➤ Integers and Place Value, Factors, Multiples and Primes ➤ Algebra: Expressions, Expanding and Factorising ➤ Drawing and Interpreting Graphs, Tables and Charts
Term 2	<ul style="list-style-type: none"> ➤ Angles, polygons, Pythagoras and Trigonometry ➤ Graphs: Real-life, Algebraic, Circles and Rates of Change ➤ Perimeter, Area and Volume, Accuracy and Bounds 	Term 2	<ul style="list-style-type: none"> ➤ Averages and Range ➤ Representing and Interpreting Data ➤ Scatter Graphs ➤ Fractions ➤ Percentages 	Term 2	<ul style="list-style-type: none"> ➤ Algebra: Equations, Inequalities and Sequences ➤ Angles, Polygons and Parallel Lines ➤ Statistics: Sampling and Averages ➤ Perimeter, Area and Volume 	Term 2	<ul style="list-style-type: none"> ➤ Pie Charts and Scatter Graphs ➤ Fractions, Decimals and Percentages ➤ Equations
Term 3	<ul style="list-style-type: none"> ➤ Transformations, Constructions, Plans and Elevations and Bearings ➤ Algebra: Quadratics, Inequalities, Simultaneous Equations ➤ Probability 	Term 3	<ul style="list-style-type: none"> ➤ Ratio and Proportion ➤ Polygons, Angles and Parallel Lines ➤ Pythagoras' Theorem and Trigonometry ➤ Linear Graphs and Coordinate Geometry 	Term 3	<ul style="list-style-type: none"> ➤ Perimeter, Area and Volume ➤ Transformations 	Term 3	<ul style="list-style-type: none"> ➤ Inequalities ➤ Sequences ➤ Properties of Shapes and Angles ➤ Statistics: Sampling and Averages

There is now a greater emphasis on problem-solving skills, which will require a level of skill in each of these areas and will test your ability to apply these skills in a variety of situations. Work in lessons can be individual, paired, group work or whole-class discussion. You may be completing an exercise to practise a skill, or discussing a new concept to address misconceptions and alternative methods. To do this, you will be taught how and when to use appropriate mathematical software and calculators. You will learn written methods and formulae required to solve problems, given exam practice questions and shown how to work independently and revise for your exams.

Examinations/Key Assessments

GCSE Maths is assessed by three written papers; paper 1 is a non-calculator assessment and a calculator may be used for papers 2 and 3. Each exam will contribute to your overall grade. There are two tiers of entry, Foundation (grades 1 to 5) and higher tier (grades 4 to 9), and assessment is by written examination only.

Homework

This is set once a week and is designed to support the work done during lessons or to reinforce a skill necessary to secure understanding. The task will be detailed on *Show My Homework*, so that pupils and their parents can easily access the work and deadlines. Prior to assessment periods, pupils may receive an increased volume of homework or independent study work. This will help them to prepare for exam revision in the future. Homework may be set online using *MyMaths* or *MathsWatch* websites. This provides support and immediate feedback on the work you have done and allows the class teacher to keep a record of a pupil's progress.

How Parents can Help

- Check *Show My Homework* regularly and ensure all work is completed to a good standard.
- Encourage the use of the Internet for homework completion and revision (see useful websites list).
- Talk about the Mathematics that your child is studying and in the world around them. Encourage the use of the correct terms and language (see parent booklet on school website).
- Ensure pupils revise for assessment tests and mock examinations.

Year 10 Mathematics (KS4)

Examination/Specification Board

Edexcel

Curriculum Overview

A GCSE in Mathematics is valued not only by institutions of further education and sixth form colleges, but by a wide variety of employers and providers of vocational training. A grasp of mathematical concepts and an ability to solve problems and think logically are vital to everyday life, as well as improving your employability.

<u>Higher 1</u>		<u>Higher 2</u>		<u>Foundation 1</u>		<u>Foundation 2</u>	
Term 1	<ul style="list-style-type: none"> ➤ Quadratic and Simultaneous Equations ➤ Inequalities ➤ Probability ➤ Multiplicative Reasoning ➤ Congruence and Similarity ➤ Trigonometric Graphs 	Term 1	<ul style="list-style-type: none"> ➤ Perimeter, Area and Circles ➤ 3D Forms and Volume ➤ Accuracy and bounds ➤ Transformations ➤ Constructions, Loci and Bearings ➤ Quadratic and Simultaneous Equations ➤ Inequalities 	Term 1	<ul style="list-style-type: none"> ➤ Ratio ➤ Proportion ➤ Pythagoras' Theorem and Trigonometry ➤ Probability ➤ Multiplicative Reasoning ➤ Construction and Bearings 	Term 1	<ul style="list-style-type: none"> ➤ Properties of Shapes, Parallel Lines and Angles ➤ Statistics: Sampling and Averages ➤ Perimeter, area and volume ➤ Real-life and Algebraic Linear Graphs ➤ Straight-line Graphs ➤ Transformations
Term 2	<ul style="list-style-type: none"> ➤ Further Trigonometry ➤ Collecting Data ➤ Cumulative Frequency ➤ Circle Theorems ➤ Circle Geometry 	Term 2	<ul style="list-style-type: none"> ➤ Probability ➤ Multiplicative Reasoning ➤ Similarity and Congruence ➤ Graphs of Trigonometric Functions 	Term 2	<ul style="list-style-type: none"> ➤ Quadratic Equations; expanding, factorising and graphs ➤ Circles, Cylinders, Cones and Spheres ➤ Fractions and Reciprocals ➤ Similarity and Congruence 	Term 2	<ul style="list-style-type: none"> ➤ Ratio and Proportion ➤ Pythagoras and Trigonometry ➤ Probability ➤ Multiplicative Reasoning: Percentages, Rates of Change, Compound Measures ➤ Construction, Loci and Bearings
Term 3	<ul style="list-style-type: none"> ➤ Vectors and Geometric Proof ➤ Reciprocal and Exponential Graphs ➤ Direct and Inverse Proportion 	Term 3	<ul style="list-style-type: none"> ➤ Further Trigonometry ➤ Collecting Data ➤ Cumulative Frequency and Box Plots ➤ Histograms ➤ Quadratics 	Term 3	<ul style="list-style-type: none"> ➤ Vectors ➤ Rearranging Equations ➤ Graphs of Cubic and Reciprocal Functions ➤ Simultaneous Equations 	Term 3	<ul style="list-style-type: none"> ➤ Algebra: Quadratic Equations and Graphs ➤ Perimeter, Area and Volume ➤ Fractions, Reciprocals, Standard Form and Indices

There is now a greater emphasis on problem-solving skills, which will require a level of skill in each of these areas and will test your ability to apply these skills in a variety of situations. Work in lessons can be individual, paired, group work or whole-class discussion. You may be completing an exercise to practise a skill, or discussing a new concept to address misconceptions and alternative methods. To do this, you will be taught how and when to use appropriate mathematical software and calculators. You will learn written methods and formulae required to solve problems, given exam practice questions and shown how to work independently and revise for your exams.

Examinations/Key Assessments

GCSE Maths is assessed by three written papers; paper 1 is a non-calculator assessment and a calculator may be used for papers 2 and 3. Each exam will contribute to your overall grade. There are two tiers of entry, Foundation (grades 1 to 5) and higher tier (grades 4 to 9), and assessment is by written examination only.

Homework

This is set once a week and is designed to support the work done during lessons or to reinforce a skill necessary to secure understanding. The task will be detailed on *Show My Homework*, so that pupils and their parents can easily access the work and deadlines. Prior to assessment periods, pupils may receive an increased volume of homework or independent study work. This will help them to prepare for exam revision in the future. Homework may be set online using *MyMaths* or *MathsWatch* websites. This provides support and immediate feedback on the work you have done and allows the class teacher to keep a record of a pupil's progress.

How Parents can Help

- Check *Show My Homework* regularly and ensure all work is completed to a good standard.
- Encourage the use of the Internet for homework completion and revision (see useful websites list).
- Talk about the Mathematics that your child is studying and in the world around them. Encourage the use of the correct terms and language (see parent booklet on school website).
- Ensure pupils revise for assessment tests and mock examinations.

Year 11 Mathematics (KS4)

Examination/Specification Board

Edexcel

Curriculum Overview

A GCSE in Mathematics is valued not only by institutions of further education and sixth form colleges, but by a wide variety of employers and providers of vocational training. A grasp of mathematical concepts and an ability to solve problems and think logically are vital to everyday life, as well as improving your employability. Having completed the Programme of Study for your GCSE Mathematics, you will now embark on a bespoke Scheme of Work, specifically targeted at the gaps in the knowledge of the class you are in. Following each assessment or mock examination, you will receive an analysis of your skills. Not only will this track your progress and show your rate of improvement, it will also highlight the areas you need to work on to achieve the best you can in your external exams. Your class teacher will use an overview of the skills analysis for all pupils in the group to tailor a Scheme of Work specifically to the needs of the group. This will be continually updated throughout the year and following each assessment. You are encouraged to use your individual analysis for your independent study, with guidance from your teacher.

Each class will be addressing different skills throughout the year, however, these will still follow the same strands:

- Number
- Algebra
- Geometry and Measure
- Ratio and Proportion
- Statistics

at a level of difficulty appropriate to the group.

As well as consolidating your knowledge and understanding, you will have more opportunities to apply your skills to a variety of problems, developing your resilience and enabling you to apply what you have learnt to less familiar tasks.

You will learn written methods and formulae required to solve problems, given exam practice questions and shown how to work independently and revise for your exams.

Examinations/Key Assessments

GCSE Maths is assessed by three written papers; paper 1 is a non-calculator assessment and a calculator may be used for papers 2 and 3. Each exam will contribute to your overall grade. There are two tiers of entry, Foundation (grades 1 to 5) and higher tier (grades 4 to 9), and assessment is by written examination only.

Homework

This is set once a week and is designed to support the work done during lessons or to reinforce a skill necessary to secure understanding. The task will be detailed on *Show My Homework*, so that pupils and their parents can easily access the work and deadlines. Prior to assessment periods, pupils may receive an increased volume of homework or independent study work. This will help them to prepare for exam revision in the future. Homework may be set online using *MyMaths* or *MathsWatch* websites. This provides support and immediate feedback on the work you have done and allows the class teacher to keep a record of a pupil's progress.

How Parents can Help

- Check *Show My Homework* regularly and ensure all work is completed to a good standard.
- Encourage the use of the Internet for homework completion and revision (see useful websites list).
- Talk about the Mathematics that your child is studying and in the world around them. Encourage the use of the correct terms and language (see parent booklet on school website).
- Ensure pupils revise for assessment tests and mock examinations.

Year 12/13 Mathematics (KS5)

Examination/Specification Board

Edexcel

Curriculum Overview

	<u>Term 1</u>	<u>Term 2</u>	<u>Term 3</u>
Year 12 (AS)	<ul style="list-style-type: none">➤ Algebra and Functions➤ Statistical Sampling, Data Presentation and Interpretation➤ Quantities and Units in Mechanics, Kinematics➤ Coordinate Geometry in the (x,y) plane➤ Further Algebra	<ul style="list-style-type: none">➤ Trigonometry➤ Vectors➤ Probability, Statistical Distributions➤ Forces and Newton's Laws➤ Differentiation➤ Integration➤ Statistical Hypothesis Testing	<ul style="list-style-type: none">➤ Exponentials and Logarithms➤ Statistical Hypothesis Testing➤ Kinematics➤ Proof➤ Algebraic and Partial Fractions
Year 13 (A2)	<ul style="list-style-type: none">➤ Functions and Modelling➤ Series and Sequences➤ The Binomial Theorem➤ Regression and Correlation➤ Moments➤ Trigonometry➤ Parametric Equations➤ Probability➤ Forces at any Angle	<ul style="list-style-type: none">➤ Differentiation➤ Numerical Methods➤ The Normal Distribution➤ Applications of Kinematics➤ Integration➤ Applications of Forces	<ul style="list-style-type: none">➤ Vectors➤ The Normal Distribution➤ Further Kinematics

The study of A-level Mathematics can be both an exciting and challenging prospect. You will develop your abilities to reason logically, generalise and construct mathematical proofs, using mathematics as an effective means of communication. You will relate mathematics to real life situations, representing various scenarios mathematically by constructing models and theorems. Several University courses require A-level mathematics. If you are thinking of studying Science, Engineering, Architecture, Accounting, Business, Computing or Teaching A-level Mathematics can provide you with the skills necessary to succeed.

Examinations/Key Assessments

Both AS and A level Mathematics are assessed by a set of terminal exams. A minimum specification calculator is required for these examinations.

Homework

A substantial homework is set at least once a week and will be detailed on *Show My Homework*. Past papers and revision guides are available for all students.

How Parents can Help

- Check *Show My Homework* regularly encourage your son/daughter to complete all work to a good standard.
- Encourage the use of the Internet for homework completion, revision and independent study (see useful websites list).
- Ensure pupils revise for assessment tests and mock exams.
- Revision guides and workbooks are available for purchase from the maths department.

Year 12/13 Level 3 Core Mathematics (KS5)

Examination/Specification Board

AQA Level 3 Certificate in Mathematical Studies

Curriculum Overview

	<u>Term 1</u>	<u>Term 2</u>	<u>Term 3</u>
Year 12	<ul style="list-style-type: none">➤ Spreadsheets➤ Types of Data➤ Collecting Data➤ Percentages➤ Fermi Estimation➤ Representing Data Numerically➤ Representing Data Diagrammatically➤ Interest Rates	<ul style="list-style-type: none">➤ Equation of a Straight Line➤ Collecting and Sampling Data➤ The Normal Distribution➤ Financial Mathematics➤ Perimeter, Circumference and Area	<ul style="list-style-type: none">➤ Similarity and Pythagoras' Theorem➤ Critical Analysis➤ Surface Area and Similarity➤ Project Work
Year 13	<ul style="list-style-type: none">➤ Representing Data Diagrammatically➤ Representing Data Numerically➤ Graphical Representation➤ Critical Analysis➤ Correlation and Regression	<ul style="list-style-type: none">➤ Repayments and Credit➤ Taxation: VAT➤ Limits of Accuracy➤ Probabilities and Estimation➤ Taxation: Income Tax and National Insurance	<ul style="list-style-type: none">➤ Critical Analysis

The Level 3 Certificate in Mathematical Studies aims to build on the knowledge, understanding and skills established in GCSE mathematics. You will develop your abilities to reason logically and use mathematics for real world problems such as personal finance and taxation. You will develop your mathematical thinking and learn skills which support courses such as A-level Psychology, Sciences and Geography as well as technical and vocational qualifications. Several University courses benefit from the skills learned in Mathematical Studies, including Accounting, Business, Computing or Teaching. Level 3 can provide you with the skills necessary to succeed and many valuable skills for life.

Examinations/Key Assessments

Level 3 Certificate Mathematical Studies is assessed by a set of terminal exams.

Homework

Homework is set weekly and detailed on *Show My Homework*.

How Parents can Help

- Check *Show My Homework* regularly encourage your son/daughter to complete all work to a good standard.
- Encourage the use of the Internet for homework completion, revision and independent study (see useful websites list).
- Ensure pupils revise for assessment tests and mock exams.