Hayesfield GIRLS' SCHOOL | MIXED SIXTH

Mathematics
Curriculum Booklet
2026-2027

Head of Faculty: Robert Holbrook

Mathematics Curriculum Intent:

According to Andreas Schleicher (Director for Education and Skills, and Special Advisor on Education Policy to the Secretary-General at the Organisation for Economic Co-operation and Development (OECD)), *"Good maths skills are the best protection against unemployment, low wages and poor health."*

This is a responsibility that we, as a faculty, take very seriously as exemplified by our moto, "Every Child Counts".

Being a girls' school, we are mindful that a disproportionate number of girls leave primary school lacking confidence in mathematics, and we aim to provide the support, encouragement and environment to put these anxieties behind them. Whilst many of our students come to us with above average levels of attainment, they do come from a large number of primary schools and so our aim is to ensure all learners make excellent progress irrespective of their previous experience.

The curriculum at Hayesfield meets, and at times exceeds the national curriculum, which consists of the following five golden threads:

- Number
- Algebra
- Geometry and measure
- Ratio, proportion and rates of change
- Probability and statistics

Our Key Stage 3 curriculum intends to develop in students a deep appreciation of the patterns and relationships between numbers and to provide a firm foundation with the tools of algebra, geometry, and statistics to enable students to solve problems in both abstract and real-world contexts. The curriculum builds on prior knowledge by consolidating concepts and standardising techniques learnt at Key Stage 2, developing, and enhancing understanding of all six areas of the secondary Mathematics curriculum and introducing new concepts such as Pythagoras and Trigonometry that provide essential foundations for Key Stage 4 Mathematics.

Our Key Stage 4 curriculum intends to continue the development of all the areas of the Mathematics curriculum encountered in Key Stage 3 with an additional strand covering vectors. In Key Stage 4 problem-solving and reasoning skills are further developed and refined up to, and in many cases, beyond the standard required in GCSE Mathematics examinations. As we have many able mathematicians, we ensure that they are given many enrichment opportunities and have extended our curriculum offer to include GCSE Further Maths and Statistics. Younger students are encouraged to compete in local and national competitions, like Maths Challenge, and we also hold our annual Multiplication Bee, which allows students to perform their numeracy skills in front to their peers – whilst growing the school values of resilience and self-confidence!

Many students at Hayesfield continue on to study A-level Mathematics and/or Further Mathematics in our Sixth Form as well as other Sixth Forms in the local area. Our curriculum provides them with all the necessary skills to be successful in these courses. We also recognise that for many other students who do not take mathematics beyond Key Stage 4, mathematics is a critical skill for many professions and opens a world of

opportunity for children. Our curriculum is therefore designed to provide all students with the knowledge and skills they will need to be successful in their future careers.

Maths Curriculum Implementation:

As Hayesfield is a member of the MNSP Trust, the MNSP Scheme of Learning is followed, which is differentiated into 5 strands. Due to the above average prior attainment of our students, we only follow the top 4 strands with our students. The lowest ability strand is utilised to unpackage the learning for individual students rather than whole classes.

Maths is set by ability in all year groups and student are assigned to sets initially by Key Stage 2 Maths results. Students are set so that they can access work that is at the right level of challenge. When a student out-performs the bottom or top 10% of students in the adjacent set across a minimum of two assessments she will be moved accordingly.

Key Stage 3

The Long Term Plan for each year presents and groups concepts in a logical sequence that enables students to develop the knowledge needed to access concepts later in the year and in subsequent years. This process begins with a 4 week induction phase at the start of Year 7 where we ensure knowledge acquired at Key Stage 2 is refreshed and securely in place.

In Years 7 and 8 all areas of the curriculum are covered over 9 units with each topic enriched through mastery lessons which consolidate recall and retention and enable a deeper exploration of problem solving with each concept. In Year 9 students recap and consolidate their learning and are then provided with stretch and challenge in preparation for their GCSE content. This consolidation in learning helps students to build their knowledge and skills, whilst providing a valuable opportunity to 'knit together' the mathematical strands. You can find the MNSP Maths full curriculum implementation plan by clicking here

Key Stage 4

The Key Stage 4 curriculum is divided into 3 carefully assembled modules of mutually reinforcing concepts. The Year 10 modules conclude with a fortnight of revision before a comprehensive assessment split over 3 papers (1 non-calculator, 2 calculator). Year 11 commences with a module of work explicitly focussed on developing problem solving and application of knowledge to GCSE exam questions. Lesson resources are interspersed with content explaining the relevance of Mathematics topic to a broad range of further study and careers. You can find the MNSP Maths full curriculum implementation plan by clicking here

Progress is monitoring through the same weekly cycle of homework, feedback and follow-up work as at Key Stage 3. Attainment is measured through tri-termly cycle of revision, assessment and holistic feedback on progress through MET reports emailed to students and parents. In addition, a mid-unit assessment is used at the start of Year 10 to help students in the transition from Key Stage 3 style assessments to Key Stage 4 style assessments.

Students who struggle with the content of the GCSE are able to sit the Edexcel Entry Level Certificate. There are 3 levels, with students having the opportunity to attempt each level up to 3 times. The course covers basic numeracy, geometry and probability topics.

Allocated Curriculum Time:

	Year 7	Year 8	Year 9	Year 10	Year 11

Fortnightly lesson allocation	7	7	7	7	7

Year 7

Term	Curriculum Foci Areas	Assessment Criteria
1	**Unit 0: Induction – Recap of KS2 Learning** ● KS2 subject knowledge is reviewed and students tackle more sophisticated problems than students encountered at KS2. ● Knowledge focus; Fractions, Percentages, Area & Perimeter, Sequences. ● Expectations of students' mathematical reasoning are increased and they are expected to communicate like a mathematician. **Unit 1: Sequences, Functions and Angles** ● Students learn to recognise patterns, continue sequences and progress to find general rules for sequences and using these rules to solve problems.	**Unit 0 - Induction** 2 x 45 minute written assessments.
2	**Unit 1: Sequences, Functions and Angles (cont.)** ● Students develop their knowledge of angles rules from KS2 and present geometric arguments for their answers. **Unit 2: Percentages and Units, Area and Volume** ● Students learn to find percentages, and tackle percentage increase and decrease problems, compound interest and repeated percentage change. ● Students learn strategies for tackling these problems with or without a calculator and to be able to tackle more complex, real life problems.	**Unit 1** 45 minute written assessment.
3	**Unit 2 Percentages and Units, Area and Volume (cont.)** ● Students recap the metric conversions for weight, capacity and length. ● Students tackle Area & Volume problems, looking at increasingly complex shapes and how these may appear in unfamiliar contexts. **Unit 3: Number** ● Students develop their numerical understanding, securing their abilities at written methods; with an emphasis on securing accuracy in all calculations.	**Unit 2** 45 minute written assessment.
4	**Unit 3: Number (cont.)** ● Students learn to identify the properties of numbers and use these to solve problems. ● Students begin to explore rounding and the accuracy of solutions and are introduced to how reliable estimates can be made.	**Unit 3** 45 minute written assessment.
5	**Unit 4: Present and Interpret Data** ● Students learn how to use tables to organise different types of data and which charts and graphs are appropriate to present each type of data. ● Students learn to interpret graphs and charts and calculate averages.	**End of Year Assessment** 45 minute written assessments.
6	**Unit 5: Probability** ● Students learn how to describe and calculate probabilities for single and combined events.	**Unit 4 and Unit 5** 45 minute written assessment.

	• Students develop their ability to organise their thinking using diagrams and tables to help aid their probability calculations.	

For further detail of the Year 7 Curriculum, please click here

Year 8

Term	Curriculum Foci Areas	Assessment Criteria
1	**Unit 6: Expressions, Equations and Pythagoras** ● Students are introduced to formal algebra and learn to create and simplify expressions. Students also learn to solve equations and inequalities of progressive difficulty. ● Students have their first introduction to Pythagoras' Theorem and how this can be used to find missing sides in right angle triangles. Some will progress to more complex problems and trigonometry.	**Unit 6** 45 minute written assessment.
2	**Unit 7: Indices and Transformations** ● Students learn the laws on indices and how standard form can simplify calculations with very large and very small values. ● Students learn to perform the 4 transformations to shapes on a coordinate grid and describe which transformation has occurred.	**Unit 7** 45 minute written assessment.
3	**Unit 8: Ratio and Graphs** ● Students learn what a ratio is, how they can be simplified and how ratios can be used to solve problems, including real life problems. ● Students investigate different types of graphs. Beginning with real life graphs and progressing to visual interpretations of the algebra concepts studied in unit 6.	
4	**Unit 8: Ration and Graphs (cont.)** ● Students investigate different types of graphs. Beginning with real life graphs and progressing to visual interpretations of the algebra concepts studied in unit 6. **Unit 9: Fractions and Accurate Drawing** ● Students revise and strengthen their fractions knowledge from KS2, progressing their understanding to be able to deal with mixed numbers and perform the four operations with fractions. ● Students deepen their understanding of percentages building on their knowledge from Y7 to look at more complex problems, including reverse percentages and compound interest.	**Unit 8** 45 minute written assessment.
5	**Unit 9: Fractions and Accurate Drawing (cont.)** ● Students are introduced to the formal ruler and compass construction methods and how to use these to solve geometric problems. ● Students are also introduced to map scales, scale drawings and plans and elevations.	**Unit 9** 45 minute written assessment. **End of Year Assessment** 45 minute written assessment.
6	**Unit 10: Statistics & Probability** ● Students deepen their understanding of averages from Y7 to be able to calculate averages from tables or graphs, use averages to find missing pieces of data and compare data sets. ● Students build on their Y7 knowledge of charts and graphs to look at more complex representations of data, such as pie charts and scatter graphs. ● Students aim to have a more fluent understanding of the key probability concepts and be better able to apply these to real life situations.	**Unit 10** 45 minute written assessment.

For further detail of the Year 8 curriculum please click here

Year 9

Term	Curriculum Foci Areas	Assessment Criteria
1	**Unit 11 - Number and Ratio** ● Students revise number content covered in Y7 and Y8, progressing to more complex concepts such as: reverse percentage problems, calculations in standard form and upper and lower bounds. ● Students revisit ratio topics covered in Y8 and develop their understanding to solve more complex problems including combined ratios.	**Unit 11** 45 minute written assessment.
2	**Unit 12 - Geometry and Measure** ● Students build on their knowledge of units and area from Y8 and tacking more complex problems in 3D and involving parts of circles. ● Students study compound measures; speed, density and pressure and begin to solve problems using these. ● Students develop their understanding of right-angled triangles and trigonometry, working on problems with multiple steps.	**Unit 12** 45-minute written assessment.
3	**Unit 13 - Algebra** ● Students consolidate their understanding of formal algebra notation with a focus on writing expressions and equations using conventional notation. ● Students solve equations and inequalities involving quadratic expressions and rearrange formulas. ● Students learn to find general rules for sequences, including quadratic sequences and use these to solve problems.	**Unit 13** 45 minute written assessment.
4	**End of KS3 Assessment** ● Students consolidate their fractions knowledge, focusing on more complex calculations with mixed numbers and converting between fractions and recurring decimals. ● Students recap the ruler and compass constructions and solve loci problems. ● Students develop their angles knowledge including angles in polygons and circle theorems, with a focus on providing full geometric arguments.	
5	**End of KS3 Assessment (cont.)** ● Students develop their indices knowledge, performing calculations in standard form, evaluating fractional and negative indices and estimating powers and roots. ● Students solve more complex equations than earlier in the year, using the quadratic formula and tackling problems which arise from geometric facts. ● Students develop their knowledge of graphs, looking more deeply at graphs of curves, rates of change and direct and inverse proportion.	**End of KS3 Mid-term Assessment** 45 minute written assessment.
6	**End of KS3 Assessment (cont.)** ● Students develop their understanding of statistics, including estimating averages from grouped data and using combined means ● Students draw and interpreting more complex graphs, understanding the difference between interpolation and extrapolation and make more precise estimates from graphs. ● Revision and preparation for end of KS3 assessment.	**End of KS3 Assessment** 2 x 45 minute written assessment.

For further detail of the Year 9 curriculum please click here

Year 10 Mathematics
Exam Board: Edexcel
Specification:1Ma1

Term	Curriculum Foci Areas	Assessment Criteria
1	**KS4 Assessment 1** ● Students revise their percentages knowledge with a focus on solving problems involving repeated percentage change, compound interest and reverse percentages. ● Students recap their knowledge of transformations progressing to enlargements and combined transformations. ● Students extend their knowledge of solving and simplifying to look at simultaneous equations, algebraic fractions and complex linear and quadratic equations.	**KS4 Assessment 1 Mid-term Assessment** 45 minute written assessment.
2	**KS4 Assessment 1 (cont.)** ● Students learn to solve graphical problems using parallel and perpendicular gradients of lines, and find points of intersection. ● Students develop their knowledge of trigonometry to solve problems involving multiple steps and non-right-angled triangles. ● Students consolidate their understanding of sequences and using Nth term rules to generalise linear and quadratic sequences. ● Students develop their knowledge of ratio, solving problems using exchange rate, combined ratio and a mixture of ratio and fractions, decimals and percentages.	
3	**KS4 Assessment 1 (cont.)** ● Students develop their knowledge of angles, focussing on parallel lines, polygons and congruency. ● Students are introduced to the idea of sampling, the different types of sampling and why it may be necessary to obtain a sample. ● Students use a variety of diagrams to organise their probability thinking and solve problems where a combination of events occur.	**KS4 Assessment 1** 2 x 45 minute written assessments.
4	**KS4 Assessment 2** ● Students develop their numeracy, performing all calculations accurately, including with decimals, and improve their understanding of accuracy using bounds. Some will learn to calculate combinations of events and prove statements about divisibility. ● Students consolidate their understanding of indices, simplifying where index laws need to be applied multiple times and evaluating negative and fractional indices.	
5	**KS4 Assessment 2 (cont.)** ● Students develop their understanding of inequalities, showing these on a number line and solving them. ● Students develop their knowledge of graphs, looking at more complex graphs than they have previously studied. Some will be introduced to functions and learn to calculate area under a graph.	**KS4 Assessment 2 Mid-term Assessment** 45 minute written assessment.
6	**KS4 Assessment 2 (cont.)** ● Students extend their knowledge of units, area and volume to look at more complex shapes than they previously studied. Some will be introduced to vectors.	**Year 10 Mock Exams** 2 x 90 minute written assessments.

	● Students develop their understanding of probability and statistics, r approach to calculating averages and interpreting graphs.	

Year 11 Mathematics

Term	Curriculum Foci Areas	Assessment Criteria
1	**KS4 Assessment 3** ● Students will investigate mastery methods that can be applied across multiple problem solving questions such as the use of tables to solve mean or compound measure problems. ● Students will extend their knowledge of algebraic manipulation, including factorising and solving quadratic equations as well as use of elimination and substitution methods for solving simultaneous equations.	**KS4 Assessment 3 Mid-term Assessment** 45 minute written assessment.
2	**KS4 Assessment 3 + Revision** ● Students will be provided with full Question Level Analysis (QLA) for the KS$ Assessment 3 Mid-term Assessment. ● Students will be given personalised areas for development from the QLA. ● Each class will revise content based on the QLA.	**Year 11 Mock Exam 1** 3 x 90 minute written assessments.
3	**Revision** ● Students will be provided with full Question Level Analysis (QLA) for the Mock Exam 1. ● Students will be given personalised areas for development from the QLA. ● Each class will revise content based on the QLA.	
4	**Revision** ● Students will be provided with full Question Level Analysis (QLA) for the Mock Exam 2. ● Students will be given personalised areas for development from the QLA. ● Each class will revise content based on the QLA.	**Year 11 Mock Exam 2** 3 x 90 minute written assessments.
5	**Revision and Exams** ● Final exam preparation	

Year 10 GCSE Further Maths
Exam Board: AQA Level 2 Certificate
Specification: 8365

Term	Curriculum Foci Areas	Assessment Criteria
1	**Basic Number** • Product rule for counting **Matrix Calculations** • Multiplying matrices by scalar • Multiply a matrix by a matrix **Introduction to Co-ordinate Geometry** • Gradients of parallel and perpendicular lines • Dividing a line in a given ratio.	**Assessment 1:** 1 x 60 minute written assessment homework task.
2	**Introduction to Calculus** • Understand and use notation • Differentiate a given polynomial • Find rate of change at a given point **Binomial Expansion** • Expand double brackets • Use the binomial expansion **Trigonometry and Pythagoras** • Find the angle between a line and a plane • Solve problems in 3D.	**Assessment 2:** 1 x 60 minute written assessment homework task.
3	**Sequences** • Linear and quadratic sequences • Limiting value of a sequence **Solving Equations** • Solving linear and quadratic equations • Solving equations with indices • Completing the square • Solving disguised quadratics .	**Assessment 3:** 1 x 60 minute written assessment homework task.
4	**Simultaneous Equations** • Solving simultaneous equations in 2 or 3 unknowns **Matrix Transformations** • Use matrices to describe a transformation • Transformations of a unit square • Combining transformations.	**Assessment 4:** 1 x 60 minute written assessment homework task.
5	**Revision and Year 10 Exam**	**Year 10 Exam:** 2x 45 minute written assessments.
6	**Further Trigonometry** • Solving trig equations • Using trig identities to prove results and solve equations.	

Year 11 GCSE Further Maths

Term	Curriculum Foci Areas	Assessment Criteria
1	**Basic Geometry** ● Sine and Cosine rule in 2D and 3D **Factor Theorem** ● Show a linear expression is a factor of a given function ● Use algebraic long division to find all the factors of a cubic ● Use Factor Theorem to solve a given cubic	**Assessment 1:** 1 x 60 minute written assessment homework task.
2	**Equations of Straight Lines and Circles** ● Find the equation of a straight line ● Know the equation of a circle and its properties ● Use circle theorems to solve problems	**GCSE Mock Exam** 1 x 105 minute exam paper
3	**Functions** ● Domain and range ● Inverse functions **Calculus Applications** ● Use calculus to find equations of tangents and normals ● Identify increasing and decreasing functions ● Find second derivatives ● Identify and distinguish maxima and minima	**Assessment 3:** 1 x 105 minute written assessment.
4	**Sketching Functions and Inequalities** ● Draw graphs with three parts to their domain ● Solve a quadratic inequality	**Assessment 4:** 1 x 105 minute written assessments.
5	**Revision** ● Question analysis of Mock Exam used to inform topics to revise as class. ● Completion of practice exam papers	

Revision and Support

How to support your daughter with her learning:

The most important thing that a parent can do to support their child's mathematics learning is to not shy away from or be negative about the subject. We understand that for many parents, mathematics may not be a subject they look back on too fondly from their own school days. This should not impede a child's own motivation and progress in mathematics, and we ask all parents to be a positive influence on their child's attitude towards mathematics. We can also provide access to our resources for parents so that, if they wish, they can improve their own mathematical knowledge alongside that of their child.

You can support your daughter by:

- Always paying a keen interest in what she is doing in her Maths lessons
- Always asking to see her completed homework
- Not letting your own fears over the subject be a reason for your daughter not learning to like the subject
- Asking her to explain the most recent topic she has covered in Maths to you
- Giving her a lot of praise for the maths that she does – confidence is a big problem for some students in maths
- Using a key resource we use at home, which is Mathswatch VLE. It is available at home and contains readily accessible videos.
- Using revision lists that are issued to students to work through maths together. Why not try the linked worksheets too?

Useful resources:

- Pearson Revision Guide and Workbook (ISBNs: 9781447988045 / 9781447987925 / 9781447988090 / 9781292210889)
- MNSP MET: https://met.midsomernortonschoolspartnership.com/home
- MathsWatch: https://vle.mathswatch.co.uk/vle/
- Corbett Maths: https://corbettmaths.com/
- Maths Genie: https://www.mathsgenie.co.uk/
- Sam learning: https://www.samlearning.com/
- BBC Bitesize: http://www.bbc.co.uk/education/subjects/z6pfb9q
- Mr Barton's Maths: http://www.mrbartonmaths.com/
- Kangaroo Maths: http://www.kangaroomaths.com/kenny2.php?page=Kschemeks3

Mathematics Final Assessment Structure:

Component	Weighting	Content	Proposed Date of Examination
Paper 1	33.3%	Non-Calculator 1 hour 30 minutes	May/June of Year 11
Paper 2	33.3%	Calculator 1 hour 30 minutes	May/June of Year 11
Paper 3	33.3%	Calculator 1 hour 30 minutes	May/June of Year 11

Please see exam board websites for up to date information:
https://qualifications.pearson.com/en/qualifications/edexcel-gcses/mathematics-2015.html

Further Maths Final Assessment Structure:

Component	Weighting	Content	Proposed Date of Examination
Paper 1	50%	Non-Calculator 1 hour 45 minutes	May/June of Year 11
Paper 2	50%	Calculator 1 hour 45 minutes	May/June of Year 11

Please see exam board websites for up to date information:
Further Maths: https://www.aqa.org.uk/subjects/mathematics/aqa-certificate/further-mathematics-8365