

Hailey Hall School
Specialist Sports College



Believe Strive Achieve



Hailey Hall School Maths Curriculum Booklet

Maths Curriculum - Intent

We believe mathematical intelligence is expandable, and that every child can learn mathematics, given the appropriate learning experiences within and beyond the classroom. Our curriculum map reflects our high expectations for every child. Every student is entitled to master the key mathematical content for their age, by receiving the support and challenge they specifically need.

Our curriculum has three key principles

1. Deep Understanding

Our practice embeds the importance of deep understanding, as equating progress with learning new procedures and rules means many students will miss out on a depth of understanding. We achieve this by allowing the pupils to represent concepts in a variety of different ways using both objects and pictures. We also support the development of functional memory using a spiral curriculum, allowing pupils to revisit topics in greater depth each year.

2. Mathematical thinking

We believe that it is essential for students to develop mathematical thinking in and out of the classroom to fully master mathematical concepts. We want students to think like mathematicians, not just DO the maths. We believe that during the learning experience students should; explore, wonder, question, conjecture, experiment and make theories in order to guide their own journey

3. Mathematical Language

We believe that pupils should be encouraged to use mathematical language throughout their maths learning to deepen their understanding of concepts.

The way students speak and write about mathematics has been shown to have an impact on their success in mathematics.. We therefore use a carefully sequenced, structured approach to introducing and reinforcing mathematical vocabulary throughout maths lessons, so students have the opportunity to work with word problems from the beginning of their learning.

Alongside these three key principles problem solving is at the heart of mathematics. By structuring our curriculum so that all students in a year group are learning the same content at the same time, they have longer to focus on each topic. Our aim is to create the optimal conditions for students to learn through problem solving and to learn to solve problems to develop lifelong transferable skills

Throughout our curriculum we also aim to ensure our pupils gain a love and appreciation for all the mathematics around them and will fully enjoy mathematics

Year 7 Mathematics

Why this subject is important:

- A good level of numeracy is required for all jobs.
- A good qualification in maths shows you can think quickly.
- A good qualification in maths shows you are able to solve problems.
- A good qualification in maths will often mean a higher salary when you start work

What you will learn:

Unit name	Topics	Skills and understanding
Year 7 Maths	<ul style="list-style-type: none"> • Round any number to the nearest 10, 100, 1000 and round a number with one decimal place to the nearest whole number • Count backwards through zero • Use columnar addition and subtraction with numbers up to four digits • Multiply two- and three-digit numbers by a one-digit number • Use known and derived facts to multiply and divide mentally • Write any number of tenths or hundredths as a decimal • Find families of common equivalent fractions • Add and subtract fractions with the same denominator • Find areas of rectilinear shapes by counting squares • Use a line of symmetry to complete a 	<ul style="list-style-type: none"> • Know the place value headings of ones, tens, hundreds and thousands • Know the Roman numerals I, V, X, L, C • Know multiplication facts up to 12×12 • Know division facts related to tables up to 12×12 • Know decimals equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$ • Know adjacent time facts involving years, months, weeks, days, hours, minutes and seconds • Know 12- and 24-hour clock conversions • Know the names and connected properties of triangles and quadrilaterals • Know the definitions of acute and obtuse angles • Know that area is measured in squares • Know that perimeter is a measure of length

	<p>symmetric shape or pattern</p> <ul style="list-style-type: none"> • Identify lines of symmetry in 2D shapes • Use coordinates in the first quadrant • Interpret and construct bar charts and time graphs 	
--	--	--

How you will be assessed:

You will be requested to complete assessment tests at the start and end of each year, as well as ongoing assessment through tasks.
You will be set regular topic questions for home learning.

The final grade is calculated in the following way:

You will be assessed after each topic. Teacher assessments and topic assessments will give a combined overall grade.

How parents / carers can help:

Provide them with a quiet place to do homework and revision, assisting with home learning where possible, practising times tables regularly

Useful websites:

Oak academy maths, Mymaths, Sumdog, BBC Bitesize

Progression routes and career opportunities:

You will need Maths qualifications for all jobs, whatever you apply for.
Jobs that especially need maths are:
Accountancy, Games designer, Engineering, Police, Pilot, Architect, Doctor, and Scientist etc.

Who to contact and how if you have a query regarding your child:

Name	Position	Email Address	Telephone
------	----------	---------------	-----------

Mr John Thurley	Maths Coordinator	jthurley@haileyhall.herts.sch.uk	01992 465208
--------------------	----------------------	--	--------------

Year 8 Mathematics

Why this subject is important:

- A good level of numeracy is required for all jobs.
- A good qualification in maths shows you can think quickly.
- A good qualification in maths shows you are able to solve problems.
- A good qualification in maths will often mean a higher salary when you start work

What you will learn:

name	Topics	Skills and understanding
8 Maths	<ul style="list-style-type: none"> • Round any number to the nearest 10, 100, 1000 and round a number with one decimal place to the nearest whole number • Count backwards through zero • Use columnar addition and subtraction with numbers up to four digits • Multiply two- and three-digit numbers by a one-digit number • Use known and derived facts to multiply and divide mentally 	<ul style="list-style-type: none"> • Know the place value headings of ones, tens, hundreds and thousands • Know the Roman numerals I, V, X, L, C • Know multiplication facts up to 12×12 • Know division facts related to tables up to 12×12 • Know decimals equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{3}{4}$ • Know adjacent time facts involving years, months,

	<ul style="list-style-type: none"> • Write any number of tenths or hundredths as a decimal • Find families of common equivalent fractions • Add and subtract fractions with the same denominator • Find areas of rectilinear shapes by counting squares • Use a line of symmetry to complete a symmetric shape or pattern • Identify lines of symmetry in 2D shapes • Use coordinates in the first quadrant • Interpret and construct bar charts and time graphs 	<p>weeks, days, hours, minutes and seconds</p> <ul style="list-style-type: none"> • Know 12- and 24-hour clock conversions • Know the names and connected properties of triangles and quadrilaterals • Know the definitions of acute and obtuse angles • Know that area is measured in squares • Know that perimeter is a measure of length
--	--	--

How you will be assessed:

You will be requested to complete assessment tests at the start and end of each year, as well as ongoing assessment through tasks.

You will be set regular topic questions for home learning.

The final grade is calculated in the following way:

You will be assessed after each topic. Teacher assessments and topic assessments will give a combined overall grade.

How parents / carers can help:

Provide them with a quiet place to do homework and revision, assisting with home learning where possible, practising times tables regularly

Useful websites:

Oak academy maths, Mymaths, Sumdog, BBC Bitesize

Progression routes and career opportunities:

You will need Maths qualifications for all jobs, whatever you apply for.

Jobs that especially need maths are:

Accountancy, Games designer, Engineering, Police, Pilot, Architect, Doctor, and Scientist etc.

Who to contact and how if you have a query regarding your child:

Name	Position	Email Address	Telephone
Mr John Thurley	Maths Coordinator	jthurley@haileyhall.herts.sch.uk	01992 465208

Year 9 Mathematics

Why this subject is important:

- A good level of numeracy is required for all jobs.
- A good qualification in maths shows you can think quickly.
- A good qualification in maths shows you are able to solve problems.
- A good qualification in maths will often mean a higher salary when you start work

Intent: What you will learn:

Unit name	Topics	Skills and understanding	Skills curriculum links
Year 9 Maths	<p>Numbers and the number system</p> <p>Calculating</p> <p>Calculating: division</p> <p>Algebraic proficiency: using formulae</p>	<ul style="list-style-type: none"> • Multiply and divide numbers with up to three decimal places by 10, 100, and 1000 • Use long division to divide numbers up to four digits by a two-digit number • Use simple formulae expressed in words • Generate and describe linear number sequences 	<p>Skills covered in year 10</p> <ul style="list-style-type: none"> • Apply the four operations with decimal numbers • Add, subtract, multiply and divide with fractions and mixed numbers • Simplify and manipulate expressions by collecting like terms

	<p>Solving equations and inequalities</p> <p>Proportional reasoning</p> <p>Calculating fractions, decimals and percentages</p> <p><u>Exploring fractions, decimals and percentages</u></p> <p>Investigating angles</p>	<ul style="list-style-type: none"> • Use simple ratio to compare quantities • Write a fraction in its lowest terms by cancelling common factors • Add and subtract fractions and mixed numbers with different denominators • Multiply pairs of fractions in simple cases • Find percentages of quantities • Solve missing angle problems involving triangles, quadrilaterals, angles at a point and angles on a straight line • Calculate the volume of cubes and cuboids • Use coordinates in all four quadrants 	<ul style="list-style-type: none"> • Simplify and manipulate expressions by multiplying a single term over a bracket • Substitute numbers into formulae • Solve linear equations in one unknown • Write a quantity as a fraction or percentage of another • Write a quantity as a fraction or percentage of another • Add, subtract, multiply and divide with fractions and mixed numbers • Write a quantity as a fraction or percentage of another • Use multiplicative reasoning to interpret percentage change • Understand and use geometric notation for labelling angles, lengths, equal lengths and parallel lines • Calculate surface area of cubes and cuboids with unknowns • Understand and use lines parallel to
--	--	---	---

	<p>Calculating space</p> <p>Investigating properties of shapes</p> <p>Mathematical movement</p> <p>Measuring data</p>	<ul style="list-style-type: none"> • Calculate and interpret the mean as an average of a set of discrete data 	<p>the axes, $y = x$ and $y = -x$</p> <ul style="list-style-type: none"> • Calculate mean, median and mode from grouped data
--	---	--	---

How you will be assessed:

You will be requested to complete assessment tests at the start and end of each year, as well as ongoing assessment through tasks. You will be set regular topic questions for home learning.

The final grade is calculated in the following way:

You will be assessed after each topic. Teacher assessments and topic assessments will give a combined overall grade. Some pupils will be entered for Edexcel award exams in Year 9 where appropriate.

How parents / carers can help:

Provide them with a quiet place to do homework and revision, assisting with home learning where possible, practising times tables regularly

Useful websites:

Oak academy maths, Mymaths, Sumdog, BBC Bitesize

Progression routes and career opportunities:

You will need Maths qualifications for all jobs, whatever you apply for. Jobs that especially need maths are: Accountancy, Games designer, Engineering, Police, Pilot, Architect, Doctor, and Scientist etc.

Who to contact and how if you have a query regarding your child:

Name	Position	Email Address	Telephone
Mr John Thurley	Maths Coordinator	jthurley@haileyhall.herts.sch.uk	01992 465208

KS4 (Year 10/11) - Mathematics Edexcel Award/GCSE

Why this subject is important:

- A good level of numeracy is required for all jobs.
- A good qualification in maths shows you can think quickly.
- A good qualification in maths shows you are able to solve problems.
- A good qualification in maths will often mean a higher salary when you start work

What you will learn:

Unit name	Topics	Skills and understanding
Term/Unit:	Types of Numbers	1. To be able to identify factors, multiples and prime numbers To be able to find squares and cubes To be able to find the LCM and HCF To be able to use index notations To be able to use index laws
	Integers	2. To be able to understand and order integers To be able to use BIDMAS To be able to multiply integers and decimals Numbers
	Reading scales and converting units	3. To be able to construct scale drawings To be able to convert units (imperial and metric)

	<p>Introduction to algebra</p> <p>Linear equations and inequalities</p> <p>Angles, lines and angles</p> <p>Symmetry</p> <p>Collecting data</p>	<p>4. To be able to use notations and symbols correctly To be able to write and simplify expressions and linear equations</p> <p>5. To be able to set up, rearrange and solve equations To be able to use linear equations to solve word problems</p> <p>6. To be able to measure and draw lines and angles to the nearest mm and degree To be able to name angles To be able to use geometric language To understand the fact that the angle sum of a triangle is 180° To be able to find missing angles in triangles To understand a proof that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices To know the properties of all types of triangles</p> <p>7. To be able to recognise reflection symmetry of shapes To understand congruence To be able to identify rotational symmetry</p> <p>8. To be able to specify a problem and plan a solution To be able to collect data from a variety of primary and secondary data To be able to process and represent data</p> <p>9.</p>
--	--	---

	<p>Averages and range</p> <p>Charts and graphs</p> <p>Decimals</p> <p>Edexcel Award Exam practice</p>	<p>To be able to calculate mean, mode, median and range</p> <p>To be able to draw a stem and leaf diagram</p> <p>10. To be able to draw histograms, composite bar charts, frequency polygons, histograms and line graphs.</p> <p>To be able to use graphs to compare distribution</p> <p>11. To be able to understand place value</p> <p>To be able to add, subtract, multiply and divide with decimals</p> <p>12. Past paper practice revision</p>
Unit:	<p>Algebra using powers and brackets</p> <p>Perimeter and area</p> <p>3D shapes</p>	<p>1. To be able to use index laws</p> <p>To be able to write expressions using squares and cubes</p> <p>2. To be able to find areas and perimeters of rectangles, triangles, trapeziums, parallelograms and compound shapes</p> <p>To be able to solve a range of problems involving areas including cost of carpet type questions</p> <p>3. To know all properties of 2D and 3D shapes</p>

		<p>To use 2D representation of 3D shapes</p> <p>To be able to draw front and side elevations</p> <p>To be able to find the surface area of 3D shapes</p>
	Volume	<p>4. To be able to calculate volume of prisms</p> <p>To understand how enlargement effects volume</p>
	Pie charts	<p>5. To be able to present data in pie charts</p> <p>To understand how pie charts are used in real life</p>
	Scatter graphs	<p>6. To be able to draw and interpret scatter graphs</p> <p>To understand negative and positive correlation</p> <p>To be able to draw lines of best fit and be able to predict values</p>
	Distance graphs	<p>7. To be able to read bus and train timetables and plan journeys</p> <p>To be able to draw distance graphs</p>
	Fractions, Decimals Percentages	<p>8. To be able to convert between fractions decimals and percentages</p> <p>To be able to calculate percentages of given amounts</p>
	Application of percentages	<p>9. To use percentages in life situations eg. VAT, value for profit or loss and interest</p>
		<p>10. To be able to generate sequences</p> <p>To find the n^{th} term of sequences</p>
		<p>11.</p>

	<p>Patterns and sequences</p> <p>Straight line graphs</p>	<p>To be able to plot and draw graphs of the form $y=mx + c$</p> <p>To be able to find the gradient of graphs</p>
Unit:	<p>Real life graphs</p> <p>Transformations</p> <p>Probability</p> <p>Circles</p> <p>Formulae</p>	<p>1. To be able to draw and interpret real life graphs</p> <p>To solve problems relating to mobile phone bills and bills</p> <p>2. To be able to describe transformations</p> <p>To know rotation, reflection, translation and enlargement</p> <p>To understand scale factors</p> <p>To identify the equation of a line of symmetry</p> <p>3. To know probability</p> <p>To be able to find the probability of an event happening using relative frequency</p> <p>To use theoretical probability to include outcomes using dice, spinners and coins</p> <p>4. To be able to draw a circle given its radius or diameter</p> <p>To use π Pi on the calculator</p> <p>Find the circumference and areas of circles</p> <p>5. To derive a simple formula, including those with squares, cubes and roots</p> <p>To be able to substitute numbers into a formula</p> <p>To be able to change subject of a formula</p> <p>6. To be able to construct an angle, a bisector, perpendicular and parallel lines</p>

	Constructions	To be able to construct angles of 30°, 45°, 60°, 90°
	Quadratic graphs	7. To be able to substitute values of x into quadratic function to find the corresponding values of y To be able to draw graphs of quadratic functions
	Pythagoras' Theorem	8. To understand and apply Pythagoras' Theorem To be able to use Pythagoras' theorem to find the hypotenuse or the length of the other sides To be able to apply Pythagoras' Theorem to practical situations
	Exam practise	9. Exam practice and revision

How you will be assessed:

You will be entered for number and measure level 1 and 2 and algebra level 2 as appropriate, you may take the functional skills and entry level route through other exams.

You will take regular mock exams leading up to the date of exams

You will be set regular questions for home learning.

The final (GCSE or Award) grade is calculated in the following way:

You will take Award exams January and May and will take your GCSE exams at the end of Year 11. Those pursuing the functional skills path will take exams in consultation between staff and pupils to assess readiness.

How parents / carers can help:

Provide them with a quiet place to do homework and revision , assist with revision where possible, regular times tables practice

Useful website and details of course books:

Book: Edexcel Mathematics Foundation / Higher GCSE, Functional skills (Entry level 1, 2, 3, level 1 and level 2) published by Pearson education
BBC Bitesize , mymaths, Oak academy, Studymaths, Corbettmaths

Progression routes and career opportunities:

You will need Maths qualifications for all jobs, whatever you apply for.

Jobs that specially need maths are:

Accountancy, Games designer, Engineering, Police, Pilot, Architect, Doctor, Scientist etc.

Who to contact and how if you have a query regarding your child:

Name	Position	Email Address	Telephone
Mr John Thurley	Maths Coordinator	jthurley@haileyhall.herts.sch.uk	01992 465208

	<p>4. Introduction to algebra</p> <p>5. Linear equations and inequalities</p> <p>6. Angles, lines and triangles</p> <p>7. Symmetry</p> <p>8. Collecting data</p>	<p>To be able to use ations and symbols correctly To be able to write and implify expressions and linear ations</p> <p>5. To be able to set up, range and solve equations To be able to use ar equations to solve word blems</p> <p>6. To be able to measure draw lines and angles to the rest mm and degree To be able to name les To be able to use metric language To understand the of that the angle sum of a ngle is 180° To be able to find sing angles in triangles To understand a proof the exterior angle of a triangle qual to the sum of the interior les at the other two vertices To know the properties ll types of triangles</p> <p>7. To be able to ognise reflection symmetry of shapes To understand gruence To be able to identify tional symmetry</p> <p>8. To be able to specify problem and plan To be able to collect a from a variety of primary and ondary data To be able to process represent data</p> <p>9. To be able to calculate mean, mode, median and ge</p>
--	--	---

	<p>9. Averages and range</p> <p>10. Charts and graphs</p> <p>11. Decimals</p> <p>12. Edexcel Award Exam practice</p>	<p>To be able to draw a stem and leaf diagram</p> <p>10. To be able to draw histograms, composite bar charts, frequency polygons, histograms and line graphs. To be able to use graphs to compare distribution</p> <p>11. To be able to understand place value To be able to add, subtract, multiply and divide with decimals</p> <p>12. Past paper practice revision</p>
Term/Unit:	<p>Algebra using powers and brackets</p> <p>2. Perimeter and area</p> <p>3. 3D shapes</p>	<p>1. To be able to use index laws To be able to write expressions using squares and cubes</p> <p>2. To be able to find areas and perimeters of rectangles, triangles, trapeziums, parallelograms and compound shapes To be able to solve a range of problems involving areas including cost of carpet type questions</p> <p>3. To know all properties of 2D and 3D shapes To use 2D representation of 3D shapes</p>

		<p>To be able to draw front and side elevations</p> <p>To be able to find the surface area of 3D shapes</p>
4.	Volume	<p>4. To be able to calculate volume of prisms</p> <p>To understand how enlargement affects volume</p>
5.	Pie charts	<p>5. To be able to present data in pie charts</p> <p>To understand how pie charts are used in real life</p>
6.	Scatter graphs	<p>6. To be able to draw and interpret scatter graphs</p> <p>To understand negative and positive correlation</p> <p>To be able to draw lines of best fit and be able to predict values</p>
7.	Distance graphs	<p>7. To be able to read bus and train timetables and plan journeys</p> <p>To be able to draw distance graphs</p>
	Fractions, Decimals and Percentages	<p>8. To be able to convert between fractions, decimals and percentages</p> <p>To be able to calculate percentages of given amounts</p>
9.	Application of percentages	<p>9. To use percentages in life situations eg. VAT, value for profit or loss and interest</p>
		<p>10. To be able to generate sequences</p> <p>To find the n^{th} term of sequences</p>
10.	Patterns and sequences	<p>11. To be able to plot and draw graphs of the form $y=mx + c$</p>

		To be able to find the gradient of graphs
Term/Unit:	<p>11. Straight line graphs</p> <p>1. Real life graphs</p> <p>4</p> <p>2. Transformations</p> <p>3. Probability</p> <p>4. Circles</p> <p>5. Formulae</p>	<p>1. To be able to draw and interpret real life graphs To solve problems relating to mobile phone bills and bills</p> <p>2. To be able to describe transformations To know rotation, reflection, translation and enlargement To understand scale factors To identify the equation of a line of symmetry</p> <p>3. To know probability To be able to find the probability of an event happening using relative frequency To use theoretical probability to include outcomes using dice, spinners and coins</p> <p>4. To be able to draw a circle given its radius or diameter To use π Pi on the calculator Find the circumference and areas of circles</p> <p>5. To derive a simple formula, including those with squares, cubes and roots To be able to substitute numbers into a formula To be able to change subject of a formula</p> <p>6. To be able to construct an angle, a bisector, perpendicular and parallel lines To be able to construct angles of $30^\circ, 45^\circ, 60^\circ, 90^\circ$</p>

	6. Constructions	7. To be able to substitute values of x into quadratic function to find the responding values of y To be able to draw graphs of quadratic functions
	7. Quadratic graphs	8. To understand and recall Pythagoras' Theorem To be able to use Pythagoras' theorem to find the hypotenuse or the length of the other sides To be able to apply Pythagoras' Theorem to practical situations
	8. Pythagoras' Theorem	9. Exam practice and revision
	9. Exam practise	

Promoting British Values:

- You will learn about how the National Census is collected, what their main elements are and how it is evaluated and used in Britain
- You will also learn about the cost of living, the Tax system and how it has an impact on the system if people do not comply with regulations.

How you will be assessed:

You will be entered for number and measure level 1 and 2 and algebra level 2 as appropriate

You will take regular mock exams leading up to the date of exams

You will be set regular GCSE questions for home learning.

The final (GCSE or Award) grade is calculated in the following way:

You will take Award exams January and May and will take your GCSE exams at the end of Year 11

How parents / carers can help:

Provide them with a quiet place to do homework and revision

Useful website and details of course books:

Book: Edexcel Mathematics Foundation / Higher Course (Published by Pearson)
BBC Bitesize

Progression routes and career opportunities:

You will need Maths qualifications for all jobs, whatever you apply for.

Jobs that specially need maths are:

Accountancy, Games designer, Engineering, Police, Pilot, Architect, Doctor, Scientist etc.

Who to contact and how if you have a query regarding your child:

Name	Position	Email Address	Telephone
Mr John Thurley	Maths Coordinator	jthurley@haileyhall.herts.sch.uk	01992 465208