HAILEY HALL SCHOOL
Believe | Strive | Achieve

Hailey Hall School Maths Curriculum Map

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	• 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	• 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 $^1/_2$, $^1/_4$, $^3/_4$ • 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

	• 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	• 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
Mrs Ann Adams	**Maths Coordinator**	**aadams@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:

ame	Topics	Skills and understanding
Maths	• 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	• Know the place value headings of ones, tens, hundreds and thousands • Know the Roman numerals I, V, X, L, C

	• 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 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	• Know multiplication facts up to 12 × 12 • Know division facts related to tables up to 12 × 12 • Know decimals equivalents of 1/2, 1/4, 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

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.

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Mrs Ann Adams	**Maths Coordinator**	**aadams@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

What you will learn:

Unit name	Topics	Skills and understanding	Skills curriculum links
Year 9 Maths	Numbers and the number system	• Multiply and divide numbers with up to three decimal places by 10, 100, and 1000	Skills covered in year 10 • Apply the four operations with decimal numbers

	Calculating Calculating: division Algebraic proficiency: using formulae Solving equations and inequalities Proportional reasoning Calculating fractions, decimals and percentages <u>Exploring fractions, decimals and percentages</u>	• 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 • 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	• Add, subtract, multiply and divide with fractions and mixed numbers • Simplify and manipulate expressions by collecting like terms • 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

	Investigating angles Calculating space Investigating properties of shapes Mathematical movement Measuring data	• 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 • Calculate and interpret the mean as an average of a set of discrete data	• 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 the axes, y = x and y = -x • 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:

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Mrs Ann Adams	**Maths Coordinator**	**aadams@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 ors, multiples and prime bers To be able to find ares and cubes

		To be able to find the and HCF To be able to use index tions To be able to use index
	Integers	2. To be able to understand order integers To be able to use MAS To be able to multiply integers and decimals numbers
	Reading scales and verting units	3. To be able to construct e drawings To be able to convert s (imperial and metric)
	Introduction to algebra	4. To be able to use tions and symbols correctly To be able to write and plify expressions and linear ations 5. To be able to set up, range and solve equations To be able to use linear ations to solve word problems
	Linear equations and ualities	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 proof the angle sum of a triangle is
	Angles, lines and ngles	To be able to find ing angles in triangles To understand a proof the exterior angle of a triangle is al to the sum of the interior les at the other two vertices

	Symmetry	To know the properties ll types of triangles 7. To be able to recognise ection symmetry of 2D shapes To understand gruence To be able to identify tional symmetry 8. To be able to specify the blem and plan To be able to collect data a variety of primary and ndary data To be able to process represent data 9. To be able to calculate mean, mode, median and range To be able to draw a and leaf diagram
	Collecting data	10. To be able to draw ograms, composite bar charts, uency polygons, histograms and graphs. To be able to use graphs ompare distribution
	Averages and range	11. To be able to understand e value To be able to add, ract, multiply and divide with mals
	Charts and graphs	12. Past paper practice and sion
	Decimals	

	Edexcel Award Exam tice	
Unit:	Algebra using powers brackets	1. To be able to use index To be able to write essions using squares and cubes
	Perimeter and area	2. To be able to find areas perimeters of rectangles, ngles, trapeziums, parallelograms compound shapes To be able to solve a e of problems involving areas uding cost of carpet type stions
	3D shapes	3. To know all properties of nd 3D shapes To use 2D representation D shapes To be able to draw front side elevations To be able to find the ace area of 3D shapes
	Volume	4. To be able to calculate volume of prisms To understand how rgement effects volume
	Pie charts	5. To be able to represent in pie charts To understand how pie ts are used in real life
		6. To be able to draw and rpret scatter graphs To understand negative positive correlation

Unit:	Scatter graphs Distance graphs Fractions, Decimals and entages Application of entages Patterns and sequences Straight line graphs Real life graphs	To be able to draw lines est fit and be able to predict es 7. To be able to read bus train timetables and plan neys To be able to draw ance graphs 8. To be able to convert ween fractions decimals and entages To be able to calculate entages of given amounts 9. To use percentages in life situations eg. VAT, value of it or loss and interest 10. To be able to generate uences To find the n^{th} term of uences 11. To be able to plot and w graphs of the form y=mx + c To be able to find the ient of graphs 1. To be able to draw and rpret real life graphs To solve problems ting to mobile phone bills and bills
	Transformations	2. ~~To be able to describe~~ sformations To know rotation, ection, translation and rgement

		ors To understand scale To identify the equation line of symmetry
	Probability	3. To know probability s To be able to find the bability of an event happening g relative frequency To use theoretical bability to include outcomes g dice, spinners and coins
	Circles	4. To be able to draw a e given its radius or diameter To use π Pi on the ulator Find the circumference areas of circles
	Formulae	5. To derive a simple ula, including those with ares, cubes and roots To be able to substitute bers into a formula To be able to change the ect of a formula
	Constructions	6. To be able to construct a ngle, a bisector, perpendicular parallel lines To be able to construct es of 30̊,45̊, 60̊, 90̊
	Quadratic graphs	7. To be able to substitute es of x into quadratic function to the corresponding values of y To be able to draw hs of quadratic functions
		8. To understand and recall agoras' Theorem To be able to use agoras' theorem to find the

	Pythagoras' Theorem Exam practise	otenuse or the length of the er sides To be able to apply agoras' Theorem to practical ations 9. Exam practice and sion

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
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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:	1. Types of Numbers 2. Integers 3. Reading scales and converting units 4. Introduction to algebra	1. To be able to identify ors, multiples and prime bers To be able to find ares and cubes To be able to find the and HCF To be able to use index tions To be able to use index 2. To be able to understand order integers To be able to use MAS To be able to multiply integers and decimals numbers 3. To be able to construct e drawings To be able to convert s (imperial and metric) 4. To be able to use tions and symbols correctly To be able to write and plify expressions and linear ations 5.

	5. Linear equations and inequalities	To be able to set up, range and solve equations To be able to use linear ations to solve word problems
	6. Angles, lines and triangles	6. To be able to measure draw lines and angles to the rest mm and degree To be able to name es To be able to use metric language To understand the proof the angle sum of a triangle is To be able to find ing angles in triangles To understand a proof the exterior angle of a triangle is al to the sum of the interior es at the other two vertices To know the properties ll types of triangles
	7. Symmetry	7. To be able to recognise ection symmetry of 2D shapes To understand gruence To be able to identify tional symmetry
	8. Collecting data	8. To be able to specify the blem and plan To be able to collect data a variety of primary and ndary data To be able to process represent data
		9. To be able to calculate mean, mode, median and range To be able to draw a and leaf diagram
		10. To be able to draw ograms, composite bar charts,

	9. Averages and range 10. Charts and graphs 11. Decimals 12. Edexcel Award Exam practice	uency polygons, histograms and graphs. To be able to use graphs ompare distribution 11. To be able to understand e value To be able to add, ract, multiply and divide with mals 12. Past paper practice and sion
Term/Unit:	1. Algebra using powers and brackets 2. Perimeter and area 3. 3D shapes	1. To be able to use index To be able to write essions using squares and cubes 2. To be able to find areas perimeters of rectangles, ngles, trapeziums, parallelograms compound shapes To be able to solve a e of problems involving areas uding cost of carpet type stions 3. To know all properties of nd 3D shapes To use 2D representation D shapes

	4. Volume 5. Pie charts 6. Scatter graphs 7. Distance graphs . Fractions,DecimalsandPercentages 9. Application ofpercentages	To be able to draw front side elevations Tobeabletofindthe ace area of 3D shapes 4. To be able to calculate volume of prisms To understand how rgement effects volume 5. To be able to represent in pie charts To understand how pie ts are used in real life 6. To be able to draw and rpret scatter graphs To understand negative positive correlation To be able to draw lines est fit and be able to predict es 7. To be able to read bus train timetables and plan neys Tobeabletodraw ance graphs 8. To be able to convert ween fractions decimals and entages To be able to calculate entages of given amounts 9. To use percentages in life situations eg. VAT, value of it or loss and interest 10. To be able to generate uences To find the n^{th} term of uences

	10. Patterns and sequences 11. Straight line graphs	11. To be able to plot and w graphs of the form y=mx+c To be able to find the ient of graphs
Term/Unit: 4	1. Real life graphs 2. Transformations 3. Probability 4. Circles	1. To be able to draw and rpret real life graphs To solve problems ting to mobile phone bills and bills 2. To be able to describe sformations To know rotation, ection, translation and rgement To understand scale ors To identify the equation line of symmetry 3. To know probability s To be able to find the bability of an event happening g relative frequency To use theoretical bability to include outcomes g dice, spinners and coins 4. To be able to draw a e given its radius or diameter To use π Pi on the ulator Find the circumference areas of circles 5. To derive a simple ula, including those with res, cubes and roots

	5. Formulae 6. Constructions 7. Quadratic graphs 8. Pythagoras' Theorem 9. Exam practise	To be able to substitute bers into a formula To be able to change the ect of a formula 6. To be able to construct angle, a bisector, perpendicular parallel lines To be able to construct es of 30,45, 60, 90 7. To be able to substitute es of x into quadratic function to the corresponding values of y To be able to draw hs of quadratic functions 8. To understand and recall agoras' Theorem To be able to use agoras' theorem to find the ɒtenuse or the length of the er ɜides To be able to apply agoras' Theorem to practical ations 9. Exam practice and sion

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:

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