

Maths Curriculum Vision, Aims and Overview

At Harefield School, our maths curriculum aims to equip students with essential mathematical skills and knowledge that underpin their academic success and future employability. By fostering an understanding of mathematical concepts, we aim to ensure that all learners are well-prepared for the demands of GCSE qualifications. Furthermore, our curriculum promotes critical thinking and problem-solving abilities, essential for progressing to further education, apprenticeships and diverse career paths. We strive to create a positive learning environment that encourages mathematical exploration and fosters a lifelong appreciation for the subject, thereby enhancing students' confidence and competence in mathematics.

Key Aims of maths at Harefield School:

- To develop mathematical fluency and problem-solving skills applicable in real-world contexts.
- To prepare students for a variety of career pathways by fostering critical thinking and analytical skills.
- To encourage students to make connections between mathematics and other subjects, as well as its applications in everyday life.
- To promote resilience and perseverance in tackling complex mathematical challenges.

Key stage 3 - Curriculum intent

- Building on Prior Knowledge:

The curriculum is carefully sequenced to ensure that each topic builds on prior knowledge. For example, in Year 7, we start with foundational topics (in the first term) like number properties and equations to ensure students have a strong base for more complex concepts in subsequent years. This progression ensures that students can connect new ideas to what they already know, reinforcing understanding and retention.

- Developing Mathematical Fluency:

Early topics focus on fluency in core skills, such as arithmetic, algebraic manipulation, and understanding of proportionality. They are first introduced in HT1 in year 8 and revisited and extended later to deepen understanding and ensure mastery in HT2 in year 9.

- Gradual Increase in Complexity:

Topics are introduced in a logical order, starting with simpler concepts and gradually moving to more complex ones. For instance, students learn linear graphs in HT2 in year 9 before exploring quadratic graphs in year 10, as the former lays the groundwork for understanding the latter.

- Interleaving Concepts:

The curriculum is designed to revisit key ideas in different contexts, helping students make connections between areas of maths. For example, ratio and proportion are introduced early and reappear in geometry and algebra contexts.

The sequence is deliberate and logical, ensuring that students develop a deep and connected understanding of mathematics. It allows them to build confidence, master fundamental skills,

and apply their learning in a variety of contexts, preparing them for success in Key Stage 4 and beyond.

	Year 7	Year 8	Year 9	Year 10	Year 11
Autumn 1	<p>Numeracy</p> <ul style="list-style-type: none"> ● Place value ● Addition and subtraction ● Multiplication and division ● Units of conversion 	<p>Numeracy</p> <ul style="list-style-type: none"> ● Positive and negative numbers <p>Algebra</p> <ul style="list-style-type: none"> ● Expressions ● Equations ● Sequences 	<p>Algebra</p> <ul style="list-style-type: none"> ● Standard form and scale ● Expanding and factorising ● Sequences ● Co-ordinates ● Linear equations and inequalities 	<p>Numeracy</p> <ul style="list-style-type: none"> ● Fractions ● Decimals ● Percentages <p>Algebra</p> <ul style="list-style-type: none"> ● Indices ● Standard form ● Surds (Higher) 	<p>Topics based on QLA</p> <p>Higher -</p> <p>Geometry and measures</p> <ul style="list-style-type: none"> ● Circles and theorems ● Proportion ● Iteration ● Proof
Autumn 2	<p>Statistics</p> <ul style="list-style-type: none"> ● Mean <p>Geometry and measures</p> <ul style="list-style-type: none"> ● Area ● Angles ● Properties of spaces 	<p>Numeracy</p> <ul style="list-style-type: none"> ● Prime numbers and factorisation <p>Fractions</p> <p>Ratio and proportion</p> <ul style="list-style-type: none"> ● Ratio ● Percentages 	<p>Graphs</p> <ul style="list-style-type: none"> ● Linear equations and inequalities ● Changing the subject ● Linear graphs ● Graphical solutions 	<p>Ratio</p> <ul style="list-style-type: none"> ● Ratio <p>Geometry and measures</p> <ul style="list-style-type: none"> ● Transformations ● Pythagoras ● Trigonometry 	<p>Topics based on QLA</p> <ul style="list-style-type: none"> ● Data handling ● Compound measures ● Functions
Spring 1	<p>Numeracy</p> <ul style="list-style-type: none"> ● Prime factor trees ● Simplifying, equivalent and converting fractions ● Fraction, decimal and percentage conversions ● Multiplying and dividing fractions 	<p>Geometry and measures</p> <ul style="list-style-type: none"> ● Angles ● Angles and constructing triangles ● Angles and constructing quadrilaterals ● Angles in parallel lines ● Area 	<p>Ratio and proportion</p> <ul style="list-style-type: none"> ● Graphical solutions ● Graphical solutions and direct proportion ● Direct and inverse proportion ● Probability 	<p>Algebra</p> <ul style="list-style-type: none"> ● Algebra ● Quadratics 	<p>Revision based on QLA</p> <ul style="list-style-type: none"> ● Probability ● Loci and bearings ● Congruence ● HCF/LCM

Spring 2	<p>Numeracy</p> <ul style="list-style-type: none"> ● Order of operations ● Negative numbers <p>Algebra</p> <ul style="list-style-type: none"> ● Algebraic understanding and notation ● Simplifying and manipulating expressions 	<p>Geometry and measures</p> <ul style="list-style-type: none"> ● Circles ● Surface area ● Volume 	<p>Geometry and measures</p> <ul style="list-style-type: none"> ● Working with data ● Scatter graphs ● Constructions ● Congruence 	<p>Geometry and measures</p> <ul style="list-style-type: none"> ● Angles ● Area and perimeter ● 3D shapes ● Decimals ● Accuracy ● Similarity 	<p>Revision and past paper practice including walking talking mocks.</p>
Summer 1	<p>Numeracy</p> <ul style="list-style-type: none"> ● Fraction, decimal and percentage conversions ● Percentages (non-calculator) ● Percentages (calculator) ● Adding and subtracting fractions 	<p>Statistics</p> <ul style="list-style-type: none"> ● Data handling ● Averages 	<p>Geometry and measures</p> <ul style="list-style-type: none"> ● Pythagoras theorem ● Angles in polygons ● Enlargement and similarity 	<p>Graphs</p> <ul style="list-style-type: none"> ● Straight line graphs ● Other graphs <p>Algebra</p> <ul style="list-style-type: none"> ● Simultaneous equations ● Sequences 	<p>Exams</p>
Summer 2	<p>Statistics</p> <ul style="list-style-type: none"> ● Representing and interpreting data ● Pie charts ● Mean, median, mode and range ● Data handling investigation 	<p>Rates of change</p> <ul style="list-style-type: none"> ● Speed, distance and time graphs <p>Geometry and measures</p> <ul style="list-style-type: none"> ● Congruent transformations 	<p>Geometry and measures</p> <ul style="list-style-type: none"> ● Enlargement and similarity ● Transformations ● Trigonometry 	<p>Algebra</p> <ul style="list-style-type: none"> ● Algebraic functions <p>Geometry and measures</p> <ul style="list-style-type: none"> ● Vectors <p>Probability</p> <ul style="list-style-type: none"> ● Probability 	