Hall Park Academy

Maths Faculty

Understand. Apply. Problem solve. Retrieve.

Handbook:
Parents version.

"At Hall Park we believe every student is capable of achieving success in, and enjoying, mathematics"

What is our curriculum intent?

The key aim for the Mathematics curriculum taught at Hall Park academy is to ensure students are exiting their GCSEs with the foundational skills required to begin to make sense of the world as well as a curiosity and appreciation of the beauty of Mathematics as a connected web of ideas.

The curriculum itself will aim to support and challenge all pupils appropriately from year 7 through to year 13, preparing all pupils for their next steps either academically, vocationally or in the workplace.

To achieve the above there are four overriding themes that can be found throughout the Mathematics curriculum. These themes are:
Developing **understanding**
Applying knowledge
Reasoning mathematically
Retrieving knowledge

Understanding will be developed through a carefully sequenced order of learning that builds on prerequisites built up previously which offers opportunities to behave mathematically. Teachers will meet the students where they are at using effective AFL to strengthen and build on this knowledge in order to effectively build schema and make connections.

Knowledge will be applied to standard and non-standard problems in order to increase fluency and further deepen understanding of ideas. This mixture of standard and non-standard will be found across the teaching of units, homework and starters.

Our students will be asked to use reasoning to both solve non-standard and unfamiliar problems as well explaining the rationale behind their solutions. Students will also be given opportunities to make conjectures, generalise and piece together chains of reasoning in order to develop transferable skills that can be taken with them beyond their studies at Hall Park.

Opportunities for knowledge retrieval will be provided via weekly home work and daily starters. The knowledge being retrieved during these starters will be chosen strategically by teachers to ensure opportunities to improve on areas of weakness are constant.

Understand. Apply. Reason. Retrieve.

What do our students learn in KS3?

The majority of students will follow our core scheme of work with some students studying our higher scheme of work. Both schemes cover the KS3 national curriculum.

Year 7

Year 7 Core: Breakdown of the year		
Unit 1	Number	Place value, formal arithmetic, types of number and negative numbers.
Unit 2	Algebra	Function machines and simplifying expressions.
Unit 3	Probability and data	Averages and interpreting charts.
Unit 4	Number	Decimals - place value, decimals – arithmetic and decimals – rounding.
Unit 5	Shape and measure	Converting between units, perimeter, simple areas.
Unit 6	Number	Simplifying fractions, equivalent fractions, arithmetic with fractions and converting with fractions.
Unit 7	Number	Fractions and percentages of an amount.
Unit 8	Probability and data	Simple probabilities of events happening and not happening.
Unit 9	Number	Proportion problems, sharing with ratios.
Unit 10	Shape and measure	Basic angle facts, angle notation and key characteristics of quadrilaterals.
Unit 11	Algebra	Sequences, coordinates and midpoints.
Unit 12	Shape and measure	Transformations of shapes.

Year 7 Higher: Breakdown of the year		
Unit 1	Number	Powers and roots, formal arithmetic, types of number and negative numbers.
Unit 2	Algebra	Expanding and factorising, substitution and forming expressions.
Unit 3	Probability and data	Averages, interpreting charts and comparing data.
Unit 4	Number	Simplifying and comparing fractions, arithmetic with fractions and mixed numbers and fractions of an amount.
Unit 5	Shape and measure	Angle notation, basic angle facts and angles around parallel lines.
Unit 6	Number	Decimals: arithmetic, rounding and place value.
Unit 7	Algebra	Equations.
Unit 8	Number	Ratio and proportion.
Unit 9	Shape and measure	Area and perimeter of 2d shapes, surface area and volume.
Unit 10	Algebra	Sequences and coordinates.

Year 8

Year 8 Core: Breakdown of the year		
Unit 1	Number	Decimals and negative numbers.
Unit 2	Number	Prime factor decomposition
Unit 3	Algebra	Substitution, expanding and factorising and solving simple equations.
Unit 4	Shape and measure	Area and perimeter of 2D shapes, volume and surface area
Unit 5	Number	Proportion and ratio problems with decimals.
Unit 6	Probability and data	Pie charts, averages from tables and comparing sets of data.
Unit 7	Algebra	Conversion graphs and real life graphs.
Unit 8	Number	Mixed numbers and reciprocals
Unit 9	Shape and measure	Angles around parallel lines and angles within polygons.
Unit 10	Algebra	Linear graphs, gradients and y intercepts.
Unit 11	Number	FDP equivalence, recurring decimals and percentage increases and decreases

Year 8 Higher: Breakdown of the year		
Unit 1	Number	Prime factor decomposition and laws of indices.
Unit 2	Algebra	Expanding and factorising using laws of indices.
Unit 3	Shape and measure	Circles, pi, Pythagoras and cylinders.
Unit 4	Algebra	Graphs of proportion and real life graphs.
Unit 5	Shape and measure	Transformations of shapes.
Unit 6	Number	Recurring decimals, percentage increases and decreases and decimal multipliers.
Unit 7	Probability and data	Probabilities of events, probabilities from charts, Venn diagrams and simple tree diagrams.
Unit 8	Shape and measure	Scales, bearings, similarity and constructing triangles.
Unit 9	Algebra	Linear graphs, gradient, y-intercept and plotting simple curves.
Unit 10	Shape and measure	Constructions and simple loci.

A small number of students who are already on the foundation scheme from year 7 will be following our legacy foundation scheme in year 8:

Year 8 Foundation: Breakdown of the year		
Unit 1	Number	Negative numbers, ratio and proportion.
Unit 2	Algebra	Simplifying expressions and function machines.
Unit 3	Shape and measure	Properties of 3D shapes, surface area and volume.
Unit 4	Probability and data	Bar charts and pie charts.
Unit 5	Number	Decimals
Unit 6	Shape and measure	Angles.
Unit 7	Number	Types of number and prime factor decomposition
Unit 8	Algebra	Sequences and Nth term
Unit 9	Number	Fractions of an amount, arithmetic with fractions and percentages.
Unit 10	Probability and data	Probability

Year 9

Year 9 Core: Breakdown of the year		
Unit 1	Number	Significant figures, laws of indices, negative indices and standard form.
Unit 2	Algebra	Expanding and factorising, substitution and forming expressions.
Unit 3	Probability and data	Samples and averages from a table.
Unit 4	Shape and measure	Enlargements.
Unit 5	Shape and measure	Scales, constructions and basic loci.
Unit 6	Algebra	Equations, inequalities and simultaneous equations.
Unit 7	Shape and measure	Circles, pi, Pythagoras and cylinders.
Unit 8	Algebra	Linear graphs, the general form, sequences and plotting curves.
Unit 9	Probability and data	Probabilities from charts and tables, Venn diagrams and combining probabilities.
Unit 10	Shape and measure	Bearings, congruence and similarity.
Unit 11	Shape and measure	Right angled trigonometry.

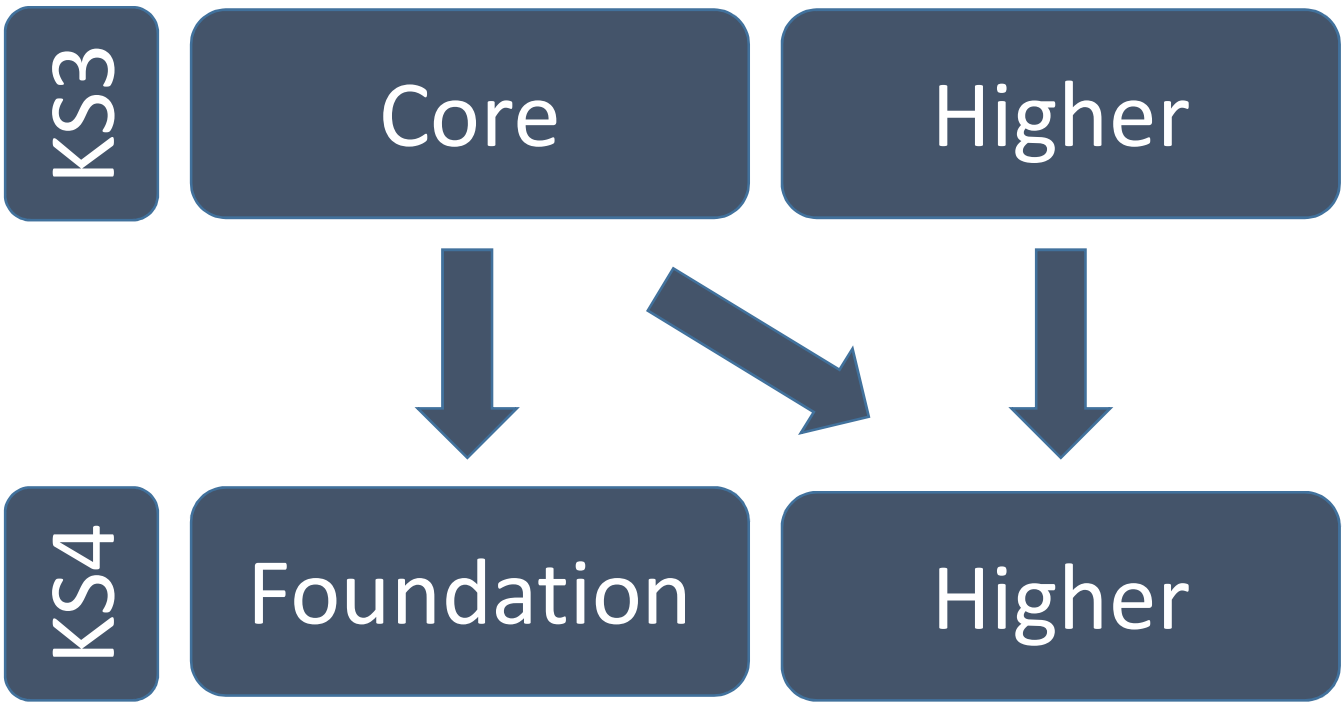
Year 9 Higher: Breakdown of the year		
Unit 1	Number	Indices, standard form and surds.
Unit 2	Algebra	Quadratic sequences and expressions
Unit 3	Probability and data	Samples, averages from tables, cumulative frequency, box plots and histograms.
Unit 4	Number	Direct proportion.
Unit 5	Shape and measure	Sectors.
Unit 6	Algebra	Plotting curves.
Unit 7	Shape and measure	Compound measures, converting between units of area and volume.
Unit 8	Number	Bounds.
Unit 9	Algebra	Simultaneous equations, straight lines and inequalities on a set of axes.
Unit 10	Shape and measure	Right angled trigonometry.
Unit 11	Algebra	Basic algebraic proof.

A small number of students who are already on the foundation scheme from year 8 will be following our legacy foundation scheme in year 9:

Year 9 Foundation: Breakdown of the year		
Unit 1	Number	Negative numbers, decimals and prime factor decomposition.
Unit 2	Algebra	Simplifying expressions, nth term and solving equations.
Unit 3	Probability and data	Two way tables, scatter graphs, pie charts, averages and frequency tables.
Unit 4	Number	FDP, recurring decimals, arithmetic with fractions and percentage increases/decreases.
Unit 5	Shape and measure	Angles in parallel lines, angles in polygons and Pythagoras.
Unit 6	Shape and measure	Scales and maps and construction bisectors of lines and angles.
Unit 7	Algebra	Real life graphs, midpoints, gradients and y-intercepts.
Unit 8	Number	Sharing with ratio, direct proportion and simple inverse proportion.
Unit 9	Shape and measure	Areas of 2D shapes, perimeter of compound shapes and circles.
Unit 10	Probability and data	Sample space diagrams, two way tables and tree diagrams.
Unit 11	Shape and measure	Transformations of shapes.
Unit 12	Probability and data	Scatter graphs, Frequency trees and other charts and tables.

What happens after KS3?

After year 9 we sit as a department and decide on which tier to enter the students into for the start of year 10.



What do our students learn in KS4?

During year 10 and 11 students cover the specification for either the foundation tier or the higher tier of the AQA GCSE Mathematics qualification.

Students will recall, strengthen and build on knowledge learned in KS3 as well as being introduced to some new ideas.

Students will then sit 3 assessments in their year 11 summer exams.

Paper 1: Non calculator
Paper 2: Calculator
Paper 3: Calculator

Here is a breakdown of the percentages of each strand of the Maths specification that will make up their GCSE assessments.

Strand	Foundation Tier	Higher Tier
Number	25	15
Algebra	20	30
Ratio	25	20
Geometry	15	20
Probability and statistics	15	15

Follow this for a link to the exam specification.

How is the AQA specification covered in years 10 and 11?

Foundation

Year 10 Foundation: Breakdown of the year		
Unit 1	Number	Decimals, place value, indices and prime factors.
Unit 2	Algebra	Simplifying expressions, substitution, expanding and factorising.
Unit 3	Number	Fractions and percentages.
Unit 4	Algebra	Equations, inequalities and sequences.
Unit 5	Shape and measure	Angles.
Unit 6	Probability and data	Averages and frequency tables.
Unit 7	Shape and measures	Perimeter, area, surface area, volume and converting between units of area and volume.
Unit 8	Algebra	Coordinates, linear graphs, gradients and real life graphs.
Unit 9	Shape and measure	Transformations of shapes.
Unit 10	Number	Ratio and proportion.
Unit 11	Shape and measure	Pythagoras' theorem and right angled trigonometry.
Unit 12	Probability and data	Venn diagrams, tree diagrams and frequency trees.

Year 11 Foundation: Breakdown of the year		
Unit 1	Shape and measure	Congruence, constructions, loci and bearings.
Unit 2	Algebra	Quadratic equations and quadratic graphs.
Unit 3	Shape and measure	Circles, sectors, cylinders, spheres, pyramids and cones.
Unit 4	Number	Indices and standard form.
Unit 5	Shape and measure	Similarity and column vectors.
Unit 6	Algebra	Simultaneous equations.
End of course: Revision cycle		

How is the AQA specification covered in years 10 and 11?

Higher

Year 10 Higher: Breakdown of the year		
Unit 1	Number	Using prime factors, indices, standard form and surds
Unit 2	Algebra	Expanding, factorising, solving and sequences
Unit 3	Number	Fractions, ratios, proportion and percentages.
Unit 4	Number	FDP, recurring decimals, arithmetic with fractions and percentage increases/decreases.
Unit 5	Shape and measure	Angles in polygons, right angled trigonometry and exact trig values.
Unit 6	Algebra	Straight line graphs, real life graphs and graphs of curves.
Unit 7	Shape and measures	Converting units of area and volume, circles, sectors, prisms, spheres and cones
Unit 8	Shape and measure	Transformations of shapes and points of invariance.
Unit 9	Algebra	Solving quadratic equations, completing the square and finding turning points.
Unit 10	Algebra	Simultaneous equations,
Unit 11	Probability and data	Combining events, tree diagrams and Venn diagrams.
Unit 12	Number	Compound measures, error intervals, and direct and inverse proportion.

Year 11 Higher: Breakdown of the year		
Unit 1	Shape and measure	Congruence, similarity with area and volume and frustums.
Unit 2	Shape and measure	Non right angled trigonometry, 3d Pythagoras and 3d trigonometry.
Unit 3	Probability and data	Cumulative frequency, box plots, histograms and comparing data sets.
Unit 4	Algebra	Regions, quadratic inequalities and iteration.
Unit 5	Shape and measure	Circle theorems
Unit 6	Algebra	Algebraic fractions, functions and algebraic proof.
Unit 7	Shape and measures	Vectors
Unit 8	Algebra	Transformations of functions
Unit 9	Shape and measure	Geometric proof
End of course: Revision cycle.		

How will students' understanding and knowledge be checked and tested?

In lessons:

Checks for understanding with the use of mini whiteboards during lessons.

Questioning during instructions and modelling in all lessons.

Outside of lessons:

Four times half termly online homework.

Twice half termly written homework.

Annual summative assessments.

What does homework in Maths look like?

In a half termly cycle our students will receive:

Two pieces of written homework on a yellow sheet that teachers will collect in and mark.
Our students will receive individual feedback on in the form of question level analysis (mentioned more in the section on how students know what they need to improve on).

Four online homework tasks on Drfrostmaths.com that teachers will monitor and use to inform future planning.

Students logins will in most cases follow the following structure:
Username – 'first initial''surname'-18343
Password – mathsisfun

So for example Harry Kane would have a username of hkane-18343.

How do our students know what areas they need to improve on?

Feedback from online homework (diagram A).

Feedback on written based homework from teacher (diagram B).

Verbal feedback from teacher within lessons.

Self assessment within lessons.

Diagram A

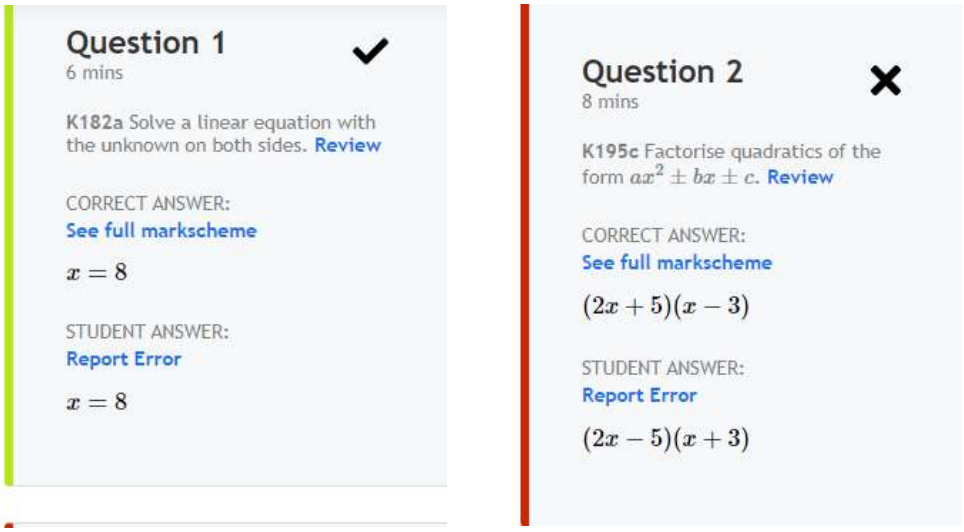


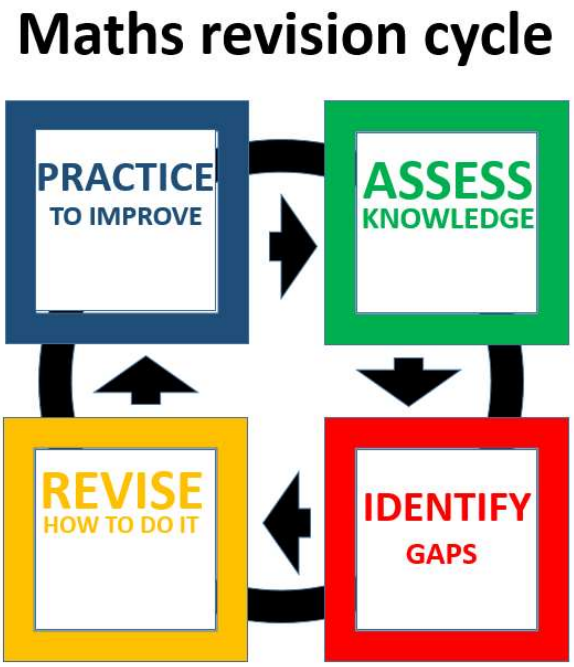
Diagram B

		Current Homework Scores											
		graph from an equation	equation between two points	factorising a quadratic	area and perimeter	circumference	compound shapes with circles	Pythagoras	standard form	negative indices	surds	Total	Percentage
Name	Out of	2	3	2	3	2	6	2	2	1	1	24	100%
[redacted]		2	2	2	3	2	0	2	1	1	1	16	67%
Average Joe		1.2	1.8	1.4	2.5	1.7	1.5	1.1	1.6	0.7	0.5	14.0	59%

	Yellow Homework Scores											
	H/W 1	H/W 2	H/W 3	H/W 4	H/W 5	H/W 6	H/W 7	H/W 8	H/W 9	H/W 10	H/W 11	H/W 12
[redacted]	25%	0%	46%	57%	8%	33%	55%	66%	67%			
AVERAGE Joe	39%	41%	40%	44%	51%	47%	46%	55%	59%			

How do students know how to revise?

Students will have the revision cycle explicitly modelled to them in a lesson in each year from 7 through to 11.



A brief summary of what students will learn:

Students are regularly assessing their knowledge in every lesson, in every starter task, on every online homework and on every written homework.

Gaps can be identified as shown in the previous page predominantly through feedback from their homework.

Students are directed to drfrostmaths and corbettmaths as websites that provide both videos and practice for all topics.

What can you do to support our students in achieving success in Maths?

We understand that Maths can be a source of anxiety for many adults. We also understand that things might be taught differently since parents were at secondary school. With this in mind, our expectations of what you can do to support us involve helping us to ensure that students know that they are expected to work hard.

As parents you can help us by ensuring that our students are doing their homework regularly, and to a high standard. You can ask them about whether they have completed the homework and even check on Drfrostmaths to see how they have performed.

We offer support for students who are struggling. Encourage your child to attend Maths support, after school on a Wednesday, if they feel that they need some help.

As a school we try to avoid phrases like, “I could never do Maths” or “I always hated Maths at school” as these can contribute towards building barriers for students lacking in confidence that can be difficult for us to break down.

All students, with our support, are capable of feeling successful in our subject.

What else does the Maths faculty offer?

Lunchtime support for students in KS3 particularly year 7 students who feel they need extra practice during a weekly drop in.

Period 6 support for KS3 and KS4 in the L hall running every Wednesday. Biscuits are provided.

Period 6 support for KS5 students. Attendance is a mixture of compulsory and optional based on most recent assessments.

Opportunities for selected students to engage with the UKMT Maths challenges.

Opportunities for selected students to engage with the Level 2 Further Maths qualification at KS4.

Logical board games interhouse event