MATHEMATICS

Intent

Mathematics increases students' resilience for problem solving when they have limited information. It teaches them how to think and work systematically, critically analyse information and effectively communicate the steps within their thinking. Our curriculum adopts a 'no tricks' approach to teaching, developing a growth mindset: everybody can do mathematics. We aim to increase awareness and understanding of where the mathematics is used in the real world to enable our students to be 'school ready, work, ready, life ready'.

Strands

Number:
Methods of calculating, representing and interacting with figures in the world.

Algebra:
Operating and manipulating with abstract symbols, rather than numbers, to find and generalise solutions for a set of variables.

Geometry:
Understanding shapes, angles, dimensions and sizes of a variety of things we see in everyday life.

Probability and Statistics:
Using likelihood, chance and data to inform our understanding and even predict future events.

SoL

Our carefully crafted Scheme of Learning follows a spiral curriculum, interweaving topics from each of the Mathematical strands before returning regularly to build upon prior learning with new content and deeper understanding.

W/C	Year 7	Year 8	9 Foundation	9 Higher	10 Foundation	10 Higher	11 Foundation	11 Higher
04-Sep	Calculations	Types of Number	Types of Number	Types of Number	Factors, Multiples & Primes	Indices	Entry Paper	Entry Paper
11-Sep							F,D,P	Accuracy & Bounds
18-Sep					Equations	Quadratic Sequences		Histograms, Box Plots & Cumulative Frequency
25-Sep	Number Sense	Algebraic Expressions	Algebraic Expressions	Algebraic Expressions	Indices	Trigonometric Ratios	Probability Trees & Venn Diagrams	Quadratic Equations
02-Oct								
09-Oct	Algebraic notation	Proportion	Proportion	Proportion	Angles & Bearings	Surds	Powers, Roots & Standard Form	Functions
16-Oct								
23-Oct	2D Shapes, Angles	Problem Solving Wk	Problem Solving Wk	Problem Solving Wk				FDP - reverse % &
HALF TERM								
06-Nov	& Symmetry	Angles, Polygons & Parallel Lines	Averages	Averages	Ratio	Ratio	Sequences	compound interest
13-Nov	Fractions				AP1		Arcs & Sectors	Graphs
20-Nov			Ratio	Ratio				
27-Nov	Time	Equations	AP1		Sequences	Standard Form	Mocks	
04-Dec								
11-Dec	Equations	Averages & Range	Area & Perimeter	Area & Perimeter	Types of Data	Cumulative Frequency & Box Plots	Inequalities & simulatneous	Ratio & Proportion
18-Dec					Problem Solving Wk			
CHRISTMAS								
CHRISTMAS								
08-Jan	Problem Solving Wk	FDP	Fractions	Decimals	Formulae	Solving Quadratics by Factorising	Ratio & proportion	Non-RA Trigonometry (incl Pythag & Trig Recap)
15-Jan	AP2	AP1	Solving Equations	Equations & Inequalities	Proportion	Proportion	Quadratics	
22-Jan	Percentages	Formulae						Iteration & Simultaneous Eqns
29-Jan								
05-Feb			Frequency Diagrams	Frequency Diagrams	Similarity & Congruence	Similarity & Congruence	Other graphs / Vectors	
HALF TERM								
19-Feb	Measure	Transformations	Frequency Diagrams	Frequency Diagrams	Similarity & Congruence	Similarity & Congruence	Averages	Vectors
26-Feb			Percentages	Bearings & Scale	Compound Units	Compound Units & Real Life Graphs		
04-Mar	Formulae						Mocks	
11-Mar		Probability	Inequalities	Linear Graphs	Factorising then Solving quadratics by	Circle Theorems		
18-Mar	Problem Solving Wk						Mock Review	Mock Review
EASTER								
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08-Apr	Rounding & Estimating	Area & Perimeter	Pie Charts & Scatter Graphs	Compound & Reverse Percentages	Pythagoras' Theorem	Linear & Quadratic functions	Pythagoras & Trig	Graphs Transformations (+ Circles & Trig Graphs)
15-Apr			AP2		Fractions, Decimals & percentages		Constructions & Loci	Real Life Graphs
22-Apr	Coordinates					Probability	Revision	Constructions & Loci
29-Apr		Sequences	Linear Graphs	Simultaneous Equations	AP2			Revision
06-May	Area & Perimeter							
13-May		Surface Area & Volume		Pythagoras	Linear & Quadratic Functions	Simplifying Algebraic Fractions	GCSEs	
20-May			Problem Solving Wk					
HALF TERM								
03-Jun	Data & Frequency	AP2	Scale Drawings, Nets,	Problem Solving Wk	Surface Area & Volume	Conditional Probability	GCSEs	
10-Jun	Financial Awareness	Financial Awareness	Financial Awareness	Financial Awareness				
17-Jun	AP3	Kinematics	Plans & Elevations	Data, Sampling & Bias				
24-Jun	3D Shape		Volume	Pie Charts & Scatter Graphs	Mocks			
01-Jul		Constructions & Congruence			Probability	Surface Area & Volume		
08-Jul	Problem Solving Wk		Probability	Kinematic Graphs				
15-Jul		Problem Solving Wk			Financial Awareness	Financial Awareness		

AP = Assessment Point

Assessment & Feedback in Maths

Students complete progress checks at the end of each topic in Maths usually every two weeks. This progress check is a series of exam questions designed to check student understanding of individual skill taught from the scheme within the topic, as well as drawing on prior learning from other topics. These progress checks are marked by the class teacher, who then identifies single AFD (area of development) focussing on one of the skills assessed. Students are then shown correct modelling of this skill and expected to reflect on their own specific mathematical errors or misconceptions within that skill, before writing a step by step guide and attempting a similar question. These reflections are teacher marked for quality and SPaG.
There are 2 summative assessments for each year group across the academic year, in KS3 students are assessed against the Age-Related skill expectation and KS4 students are assessed against the AQA GCSE criteria.

In The Library

The Horizon Library contains several books that both support the Maths curriculum and also accessibly written books that give a taste of Mathematics beyond the curriculum. Students can ask either Mrs Wakefield or Miss Dickinson to help them find any of these books

Teacher's suggestion:

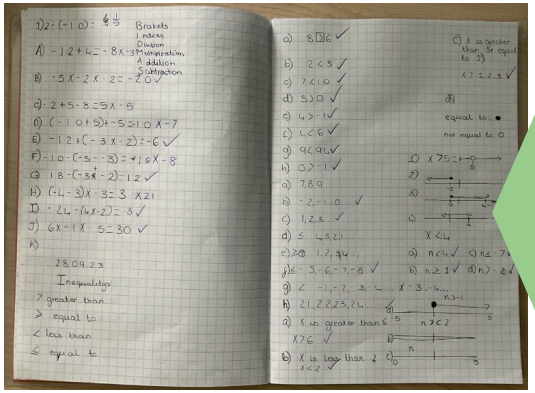
KS3

- **Infinity and Me by Kate Hosford**
- **Humble Pi: A Comedy of Maths Errors by Matt Parker**
- **The Simpsons and Their Mathematical Secrets by Simon Singh**

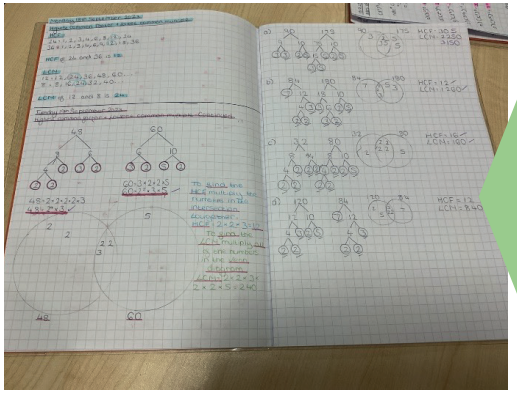
KS4

- **Fermat's Last Theorem by Simon Singh**
- **Seventeen Equations that Changed the World by Professor Ian Stewart**

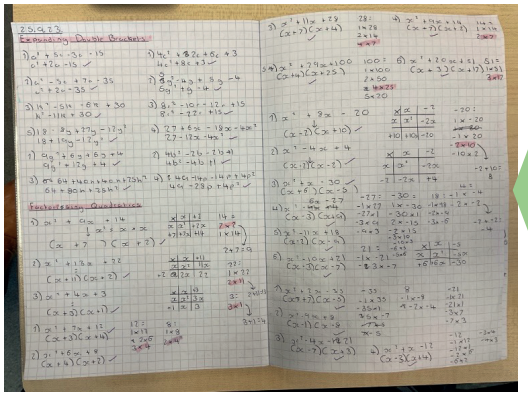
What are our students currently working on?



Year 7 have been looking at negative numbers and expressing them with inequality symbols



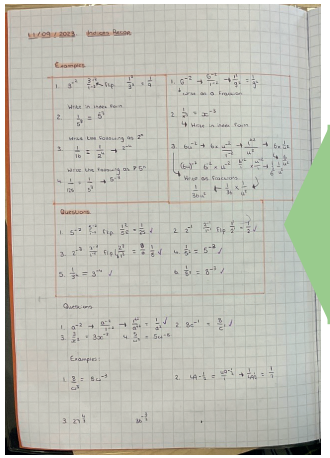
Year 8 have been looking at properties of numbers including prime factors, highest common factors and lowest common multiples



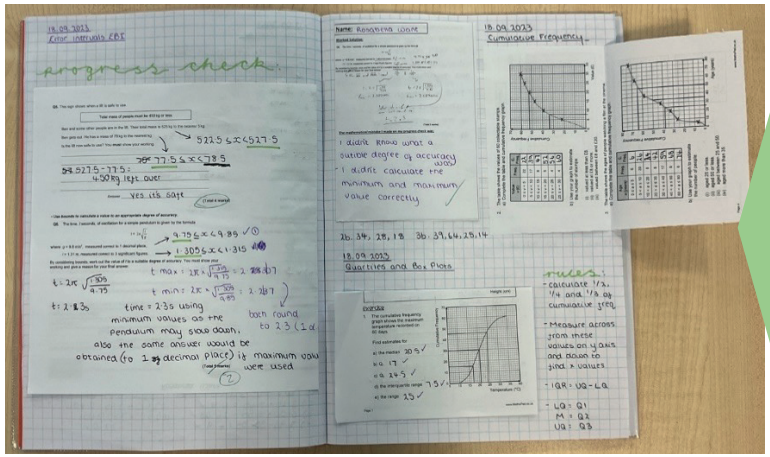
Year 9 have recently been expanding and factorising quadratics.

Sparx Maths

Every week students are set 30 mins of Home Learning on Sparx Maths. This work is both specific to the subjects they are currently studying and personalised to their individual needs, using algorithms to set questions at the appropriate difficulty for each student and providing short videos for support where necessary.
To log on to Sparx, students use their school email account (with the same password).
Sparx is due every Monday at 5pm. For any student who requires assistance with their home learning, Sparx club is available to all, running weekly in the Maths Department from 3pm.



The first topic for **Year 10** has been working with and manipulating indices



Year 11 have been looking at Data and Histograms. Here is also an example of the feedback and response work.