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	W/C	CPD	Year 7	Year 8	9 Foundation	9 Higher	10 Foundation	10 Higher	11 Foundation	11 Higher
02-Sep	W1	INSET	Calculations	Types of Number	Types of Number	Types of Number	Factors, Multiples & Primes	Indices	Entry Paper	Entry Paper
09-Sep	W2	DDT							F,D,P	Accuracy & Bounds
16-Sep	W3	DDT	Y7 Baselines				Equations	Quadratic Sequences		Histograms, Box Plots & Cumulative Frequency
23-Sep	W4	College	Number Sense	Algebraic Expressions	Algebraic Expressions	Algebraic Expressions				
30-Sep	W5	DDT					Indices	Trigonometric Ratios	Probability Trees & Venn Diagrams	Quadratic Equations
07-Oct	W6	College, Y7 Sets	Algebraic notation	Proportion	Proportion	Proportion				
14-Oct	W7	Y11 Parents Evening					Sequences	Surds	Powers, Roots & Standard Form	Functions
21-Oct	W8	DDT	2D Shapes,	Problem Solving Wk	Problem Solving Wk	Problem Solving Wk				
HALF TERM	HALF TERM									
04-Nov	W9	College (1.5hr)	Angles & Symmetry	Transformations	Averages	Averages	Ratio	Ratio	Sequences	FDP - reverse % &
11-Nov	W10	College R&P Session	Fractions		Assessment Week 1				Arcs & sectors (with area & property of circles re-cap)	Graphs
18-Nov	W11	DDT			Averages	Averages	Angles & Bearings	Solving Quadratics by Factorising		
25-Nov	W12	DDT	Time	Equations	Ratio	Ratio		Probability	Mocks	
02-Dec	W13	DDT								
09-Dec	W14	DDT	Equations	Averages & Range	Area & Perimeter	Area & Perimeter	Formulae	Standard Form	Ratio & proportion	Ratio & Proportion
16-Dec	W15	DDT								
CHRISTMAS	CHRISTMAS									
CHRISTMAS	CHRISTMAS									
06-Jan	W16	College (1.5hr)	Problem Solving Wk	FDP	Fractions	Decimals (incl Recurring, Estimates & Rounding)	Proportion	Proportion	Inequalities & simultaneous equations	Non-RA Trigonometry (incl Pythag & Trig Recap)
13-Jan	W17	DDT	Percentages				Assessment Week 1			
20-Jan	W18	DDT		Assessment Week 1	Solving Equations	Equations & Inequalities	Proportion	Proportion	Averages	Vectors
27-Jan	W19	Y11 Parents Evening		Formulae			Compound Units	Compound Units & Real Life Graphs		
03-Feb	W20	Y9 Parents Evening	Measure		Frequency Diagrams	Frequency Diagrams			Quadratics (solving, roots & turnings points)	Iteration
10-Feb	W20	College (Fri INSET)		Angles, Polygons			Similarity & Congruence	Similarity & Congruence		
HALF TERM	HALF TERM									
24-Feb	W22	Y10 Parents Evening	Assessment Week 1	& Parallel Lines	Percentages	Compound & Reverse Percentages	Similarity & Congruence	Similarity & Congruence	Non Calc Number Skills	Simultaneous Eqns
03-Mar	W23	Y8 Parents Evening	Formulae				Factorising then Solving quadratics by factorising	Simplifying Algebraic Fractions	Other graphs / Vectors	Real Life Graphs
10-Mar	W24	DDT		Probability	Pie Charts & Scatter Graphs	Pie Charts & Scatter Graphs			Mocks	
17-Mar	W25	DDT	Area & Perimeter				Surface Area & Volume	Conditional Probability		
24-Mar	W26	DDT		Sequences	Linear Graphs	Linear Graphs			Pythagoras & Trig	Graphs Transformations (+ Circles & Trig Graphs)
31-Mar	W27	DDT								
EASTER	EASTER									
EASTER	EASTER									
21-Apr	W28	College (1.5hr)	Coordinates (+Scatter Graphs)	Area & Perimeter	Inequalities	Data, Sampling & Bias	Linear & Quadratic Functions	Linear & Quadratic functions	Constructions & Loci (with	Constructions & Loci
28-Apr	W29	Y7 Parents Evening			Assessment Week 2				Revision	Revision
05-May	W30	DDT	Problem Solving Wk		Inequalities	Bearings & Scale	Pythagoras' Theorem	Circle Theorems		
12-May	W31	DDT	Rounding & Estimating	Assessment Week 2	Scale Drawings, Nets, Plans & Elevations				GCSEs	
19-May	W32	DDT		Constructions & Congruence		Problem Solving Wk	Fractions, Decimals &	Surface Area & Volume		
HALF TERM	HALF TERM									
02-Jun	W33	College (1.5hr)	Data & Frequency Tables	Congruence	Types of Data (Sampling &	Simultaneous Equations	Percentages	Volume	GCSEs	
09-Jun	W34	DDT	Assessment Week 2	Financial Awareness week	Financial Awareness week	Financial Awareness week	Probability	Cumulative Frequency & Box Plots		
16-Jun	W35	DDT (Inset Fri)	3D Shape (+Area Recap)	Kinematics	Problem Solving Wk	Equations				
23-Jun	W36	DDT			Volume	Pythagoras	Mocks			
30-Jun	W37	DDT		Surface Area & Volume			Financial Awareness week	Financial Awareness week		
07-Jul	W38	DDT	Problem Solving Wk		Probability	Kinematic Graphs	Work Experience			
14-Jul	W39	DDT	Financial Awareness week	Problem Solving Wk			Mock Review	Mock Review		

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 students in lessons in y7-9 and marked by the teacher in y10 and y11. The class teacher then identifies the 'next steps' for the students by providing whole class feedback focusing on at least one of the skills that was assessed in the progress check. . 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:

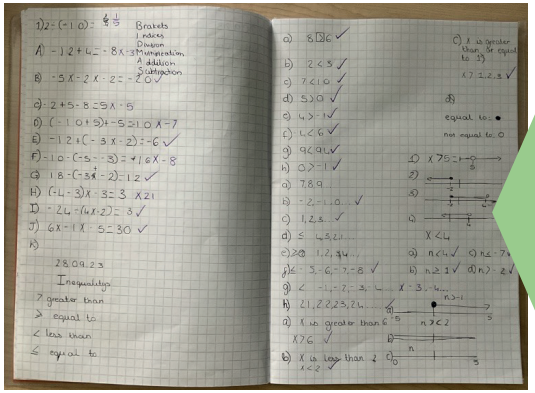
KS3

- **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**

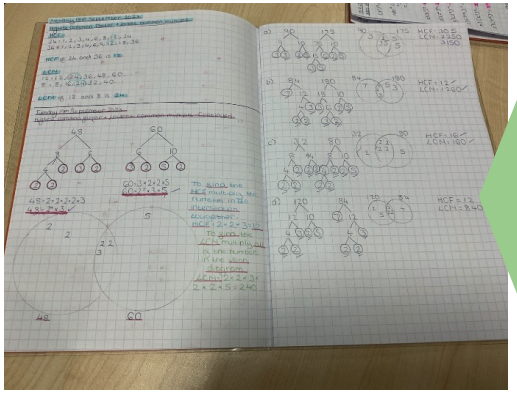
KS4

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

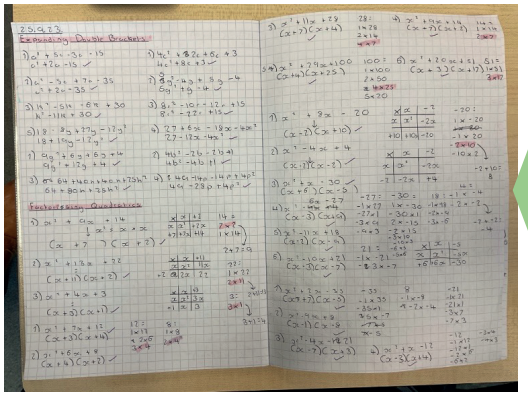
What are our students currently working on?



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



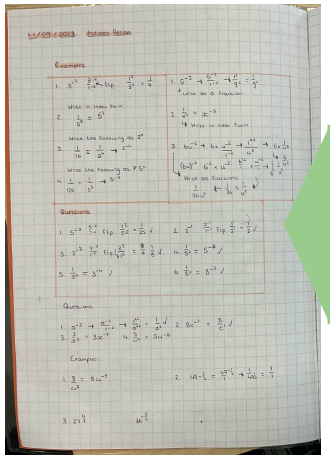
Year 8 have been looking at properties of numbers including prime factors, highest common factors and lowest common multiples



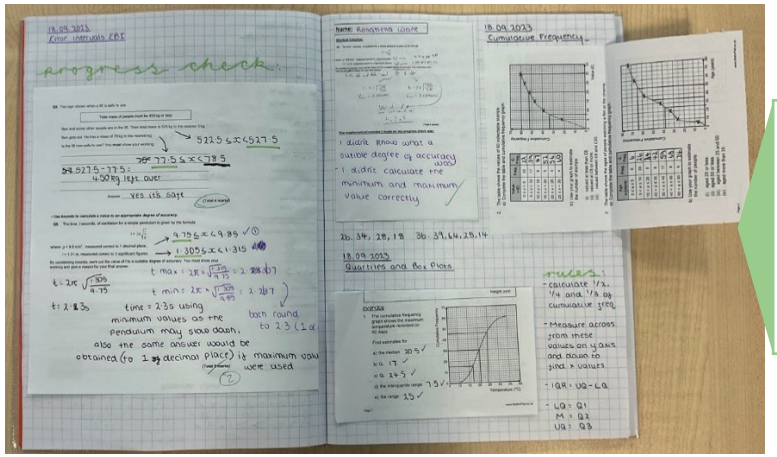
Year 9 have recently been expanding and factorising quadratics.

Sparx Maths

Every other week students are set 20 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 now set week 2 Friday and due in week 1 Friday.



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.