



Year 8 MATHS



Topic Titles

- Properties of numbers
- Directed numbers
- Expressions
- Enlargement and bearings
- Probability
- Fractions, decimals and percentages
- Ratio and proportion
- Sequences
- Parallel lines and polygons
- Proportional reasoning
- Solving equations
- Circles and cylinders
- Graphs
- Probability
- Measuring and presenting data

Intent

The intention of the maths curriculum is to foster pupils' interest, enjoyment, and curiosity of maths. By following the National Curriculum, our curriculum will be rigorous, coherent and connected throughout Key Stage 3. We aim to develop competent mathematicians who are able to apply their knowledge across subjects, year on year.

By designing the curriculum around a mastery approach all students will gain depth to their learning leading to secure and sustained progress over time. All students will develop their fluency, reasoning and problem-solving skills.

The department has the strong belief that all students can be successful in maths and teaching for understanding is at the heart of every lesson.

Links with other subjects

- Averages and data – Science
- Geometric reasoning – Art
- Fractions – Music
- Logical reasoning – computing
- Measures - Tech
- Percentages and negative numbers – History
- Graph interpretation and measures - Geography

How will knowledge and skills be taught?

Knowledge and skills will be taught through a combination of teacher-student explanation and student self-discovery. Teaching will follow the NCETMs Teaching for Mastery approach with lessons consisting of visual representations, modelling, and purposeful practice to help students build and link their knowledge together.

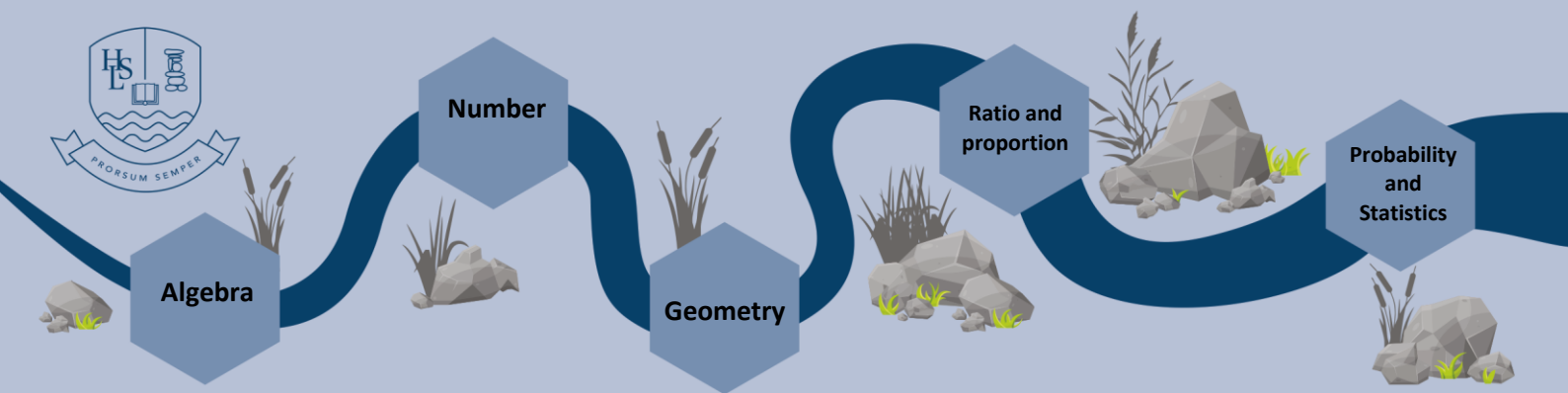
There is a focus in year 8 of building a on the secure foundation of year 7. Students will revisit ideas they have before and build on these in further depth.

How can parents help?

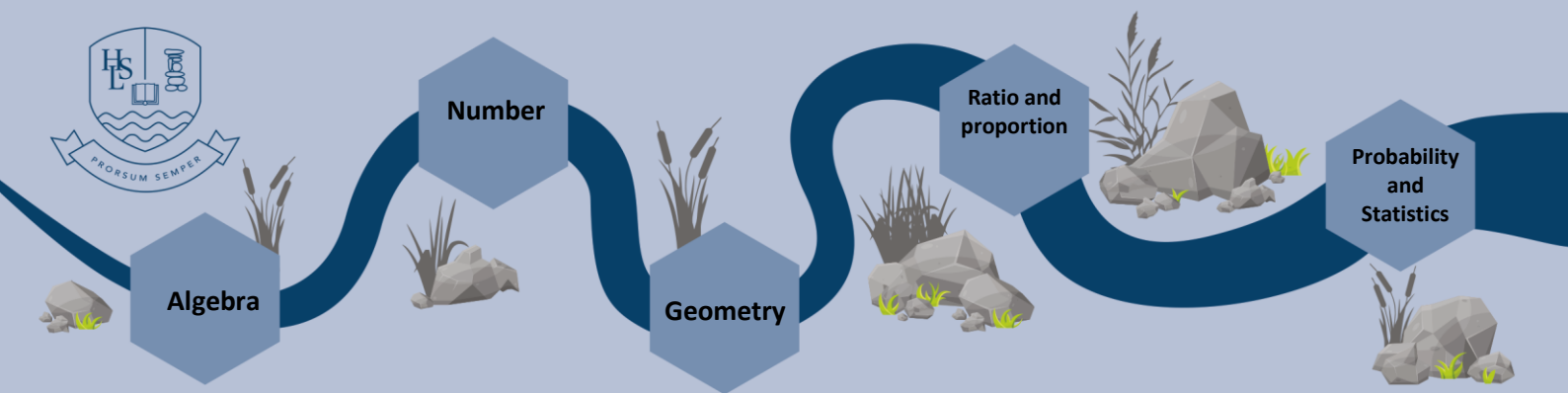
- Present a positive opinion of maths – please change: 'I was never very good at maths' to 'I had to work really hard at maths'
- Encourage your child to attend Sum Up The Week to consolidate their learning
- Highlight the use of maths in your everyday life – calculating change, timings etc
- Speak to your child about the maths they are learning in school and ask them to explain their understanding to you.
- Maintain your child's fluency with timestables, mental maths and written multiplication and division.

Recommended Reading and Preparation for Learning

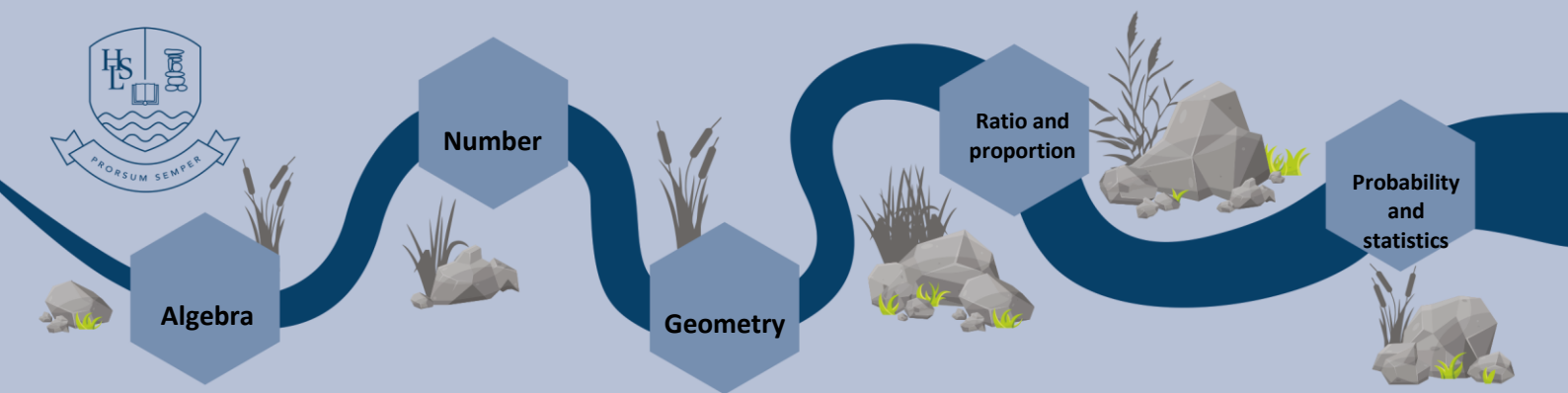
Murderous Maths – Kjartan Poskitt
The Number Devil – Hans Magnus Enzensberger
The Man Who Counted – Malba Tahan
Alex's Adventures in Numberland – Alex Bellos
How Long is a Piece of String – Rob Eastaway
How Many Socks Make a Pair – Rob Eastaway
Humble Pi – Matt Parker



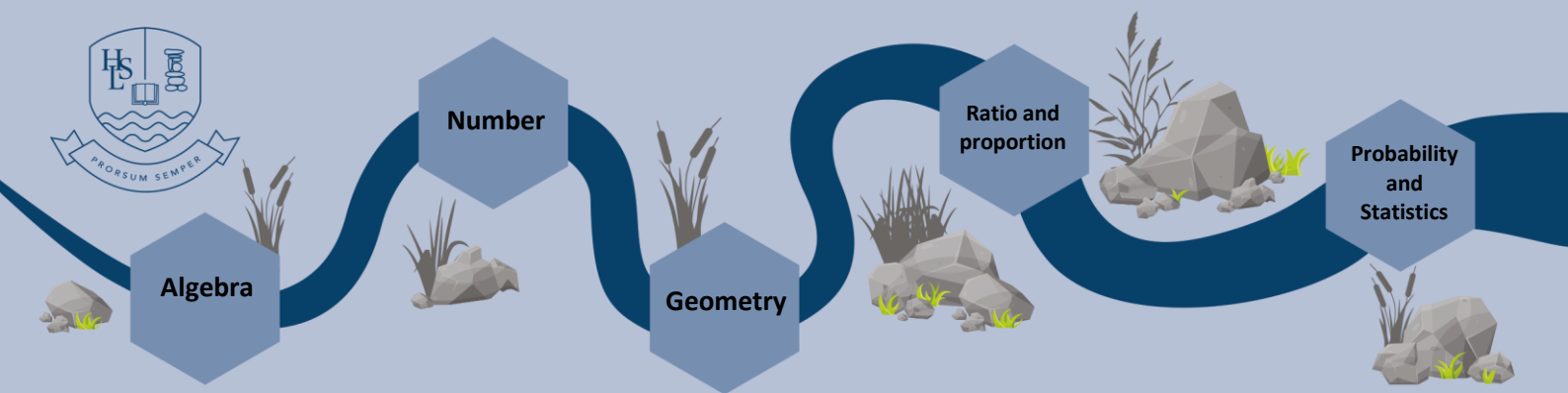
Subject: Maths		Year Group: 8	Term: 1, 2 and 3
Module/Theme: Algebra			
Topic Outline & Aims (Intent) Through the algebra topics covered in Year 8 students will take the necessary steps to build on their knowledge from year 7. The learning will continue to be structured by pupils working in the concrete and pictorial and moving onto the more abstract. The Year 8 algebra topics will allow students to consolidate and deepen their understanding of manipulating expressions and use this within solving equations and graphical representations.			
Key Skills and Knowledge taught through this topic: (Intent) <ul style="list-style-type: none"> • Simplify more complex expressions • Simplify expressions involving indices • Factorise linear expressions • Rearrange equations • Solve equations when an unknown is on both sides and brackets are involved • Apply solving equations to geometrical problems • Understand and interpret linear graphs in the form $y=mx+c$ and $ax+by=c$ • Apply their knowledge of graphs to real life situations (distance-time, linear rates of change) 			
Prior Learning: (Context) <u>KS2:</u> Use of symbols and letter to represent missing numbers Substitute into worded formulae Substitute into simple formulae <u>Mathematics programme of study:</u> Key Stage 2 Pg 42-43 <u>Year 7:</u> Understanding the 'rules of algebra' Simplify expressions by collecting like terms Expanding brackets Substitution Solving equations with unknowns on one side		Future Learning: (Context) KS3: Expanding and factorising quadratic expressions Direct and inverse proportion Solving inequalities Further straight line and quadratic graphs Simultaneous equations KS4: As above and Mathematics Programme of Study Key Stage 4 Pg7-8	
RRSA Links: Article 17 – Access information Article 29 – Goals of education Article 28 – Access education		Assessment of Learning: (Impact) Summative: formal assessments in December, March, May Formative: BAM tasks and homework tasks Informal: low-stakes quizzes, questioning, mini-whiteboard work	
British Values Links: Mutual respect – Working together with tolerance and mutual understanding, treating others with respect.			
Eco Schools Links: N/A			
Reading / Enrichment: <u>Useful websites:</u> Mathswatch clips – A1a – A28 Corbettmaths.com <u>In school enrichment:</u> Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor <u>Books:</u> CGP: Key stage 3 complete practice		Key Vocabulary: (Literacy) Expression, equation, formulae, term, function, variable, simplify, expand, substitute, solve,	
		Career Links: Engineer Economist Accountant Financial analyst Data analyst Research scientist Computer programme	



Subject: Maths		Year Group: 8	Term: 1, 2 and 3
Module/Theme: Geometry			
Topic Outline & Aims (Intent) During year 8 students will build upon their prior learning of geometry. Through discovery, students will be able to deepen their understanding of the properties of shapes, area, volume, angles and scale.			
Key Skills and Knowledge taught through this topic: (Intent) <ul style="list-style-type: none"> • Draw and interpret plans and elevations • Enlarge shapes by a positive and fractional scale factor from a centre of enlargement • Understand and interpret scale diagrams • Understand, interpret and construct representations of bearings. • Recognise and solve problems using alternate and corresponding angles • Understand and solve problems involving interior and exterior angles in polygons • Recognise and label the parts of a circle • Calculate the area and circumference of a circle, semi and quarter circles • Calculate the volume of a cylinders and triangular prisms 			
Prior Learning: (Context) <u>KS2:</u> Please see Year 7 Geometry Mathematics programme of study: Key Stage 2 Pg 43 – 45 <u>Year 7:</u> Correct notation of angles, parallel and perpendicular lengths Vertically opposite angles Angles around a point and on a straight line Finding missing angles in triangles and quadrilaterals Identify faces, edges and vertices Area of parallelograms, triangles and trapezia Volume of cubes and cuboids Coordinates Rotation, reflection and translation		Future Learning: (Context) KS3: Arc lengths Areas of sectors Surface area of triangular prisms Surface area of cylinders Similarity Congruence Constructions and Loci KS4: As above and Mathematics Programme of Study: Key Stage 4	
RRSA Links: Article 17 – Access information Article 28 – Access education Article 29 – Goals of education		Assessment of Learning: (Impact) Summative: formal assessments in December, March and May Formative: BAM tasks and homework tasks Informal: low-stakes quizzes, questioning, mini-whiteboard work	
British Values Links: Mutual respect – Working together with tolerance and mutual understanding, treating others with respect.			
Eco Schools Links: N/A			
Reading / Enrichment: <u>Useful websites:</u> Mathswatch clips – A1a – A28 Corbettmaths.com <u>In school enrichment:</u> Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor <u>Books:</u> CGP: Key stage 3 complete practice		Key Vocabulary: (Literacy) Common metric and imperial units, multiplier	
		Career Links: Basic numeracy requirement for all careers. Engineer Builder Banker	



Subject: Maths		Year Group: 8	Term: 1, 2 and 3
Module/Theme: Number			
Topic Outline & Aims (Intent)			
<p>The Number strand of the curriculum is fundamental to successful progression through Key Stage 3. The aim in Year 8 is for students to fluency of the fundamentals. Students will deepen their understanding of familiar numerical concepts from Year 7 including negative numbers, fractions and percentages.</p>			
Key Skills and Knowledge taught through this topic: (Intent)			
<ul style="list-style-type: none"> • Write a number as the product of its prime factors and use this to find the HCF and LCM of 2 numbers • Understand and convert numbers to and from standard form • Calculate with negative numbers including decimals and powers • Understand and accurately apply the order of operations • Decimal and fraction equivalents and use prime factors to identify terminating/recurring decimals • Understand the connection between ratios and fractions • Divide an amount into a ratio and solve problems involving ratio • Understand the purpose of a multiplier and use this within percentages • Calculate percentage change, reverse percentages and simple interest 			
Prior Learning: (Context)		Future Learning: (Context)	National Curriculum Links: (Context)
<p>KS2: Written methods for calculating with integers Multiplying and dividing by powers of 10 Fraction equivalents and calculations with proper fraction Percentages of amounts Mathematics Programme of Study: Key Stage 2 (Page 6, 11, 18, 24, 31, 39)</p> <p>Year7: Calculating with integers and decimals Powers and roots Rounding and significant figures Properties of numbers Percentage changes Ratio notation and simplifying of Calculations with mixed numbers</p>		<p>Year 9: Bounds and error intervals Calculations with numbers written in standard form Compound units (speed and pressure) Proportion</p> <p>KS4: Compound interest Fractional and negative indices Working with surds and recurring decimals</p>	<p>Mathematics Programme of Study: Key Stage 3 (Page 5 and 6)</p>
RRSA Links:		Assessment of Learning: (Impact)	
<p>Article 17 – Access information Article 28 – Access education Article 29 – Goals of education</p>		<p>Summative: formal assessments in December, March, June</p> <p>Formative: BAM tasks and homework tasks</p> <p>Informal: low-stakes quizzes, questioning, mini-whiteboard work</p>	
British Values Links:			
<p>Mutual respect – Working together with tolerance and mutual understanding, treating others with respect.</p>			
Reading / Enrichment:		Key Vocabulary: (Literacy)	Numeracy Opportunities:
<p>Useful websites: Mathswatch clips – N1 – N46 Corbettmaths.com In school enrichment: Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor Books: CGP: Key stage 3 complete practice</p>		<p>Place value, square number, cube number, square root, cube root, rounding, significant, estimate, prime, factor, multiple, operation, numerator, denominator, equivalent, simplify, divisor, dividend, quotient, multiplicand</p>	<p>Career Links: Basic numeracy requirement for all careers</p>



Subject: Maths		Year Group: 8	Term: 1, 2 and 3
Module/Theme: Probability and Statistics			
Topic Outline & Aims (Intent) During Year 8 students will meet the idea of theoretical probability calculating probabilities and finding probability from a range of representations. Statistics will be taught through project-based work. Students will be introduced to a large data set and use their new knowledge to analyse and present their findings. Lessons within this unit of work will be structured with content and skills being taught and then students applying this skill to their data set.			
Key Skills and Knowledge taught through this topic: (Intent) <ul style="list-style-type: none"> • Understanding and applying the probability scale • Calculating theoretical probabilities • Understanding mutually exclusive events and the sum of probabilities • Calculate probabilities from Venn diagrams, frequency trees and possibility space diagrams • Understand the difference between theoretical and experimental probability • Understand the types of data (qualitative, quantitative, discrete and continuous) • Calculate averages from frequency tables • Construct and interpret composite and compound bar charts, pie charts and scatter graphs 			
Prior Learning: (Context) KS2: <ul style="list-style-type: none"> • Understand the meaning of 'average' as a typicality (or location) • Construct and interpret a pictogram • Know how to tally • Construct and interpret a line graph and single bar charts • Understand pie charts Mathematics programme of study: Key Stage 2 Year 7: Calculating averages from lists of data Frequency tables Construct and interpret bar charts and pie charts	Future Learning: (Context) Year 9: Time series Frequency polygons Probabilities of independent combined events Probabilities of dependent combined events Tree diagrams Relative frequency KS4: As above and Mathematics Programme of Study: Key Stage 4	National Curriculum Links: (Context) Mathematics Programme of Study: Key Stage 3 pg 9	
RRSA Links: Article 17 – Access information Article 28 – Access education Article 29 – Goals of education		Assessment of Learning: (Impact) Summative: formal assessments in October, February and June Formative: BAM tasks and homework tasks Informal: low-stakes quizzes, questioning, mini-whiteboard work	
British Values Links: Mutual respect – Working together with tolerance and mutual understanding, treating others with respect.			
Reading / Enrichment: <u>Useful websites:</u> Mathswatch clips – A1a – A28 Corbettmaths.com <u>In school enrichment:</u> Sum up the week Maths challenge club Weekly maths challenge Numeracy in tutor <u>Books:</u> CGP: Key stage 3 complete practice	Key Vocabulary: (Literacy) Common metric and imperial units, multiplier	Career Links: Basic numeracy requirement for all Data analyst Actuary Statistician Business leader	