Subject Overview Mathematics – Year 8

Students will take their skills from year 7 and build on them to deepen their fluency with increasingly more complex numbers and algebra. They will begin to appreciate the interconnected nature of Mathematics, applying their knowledge and skills to problems that require a more multidisciplined approach.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	**U1 Standard From (12 Lessons)** Solve problems + − × ÷ with directed numbers & decimals. Explore standard form numbers. **U2 Index Laws (8 Lessons)** Explore and use the index laws with numbers & algebra. Apply HCF and LCM in context to problems. **Checkpoint 1** • Number calculations • Standard Form • Index Laws • HCF & LCM **U3 Probability (7 Lessons)** The vocab. & calculations needed to describe likelihood, including combined events.	**U3 Probability (5 Lessons)** Continued from HT1. **U4 Algebra (12 Lessons)** Expand, factorise and simplify expressions, including quadratics. Substitute into formulae. **AP1 Assessment** • Checkpoint 1 topics • Probability • Recall basic averages **U5 Fractions & Decimals (8 Lessons)** Solve problems + − × ÷ with fractions, mixed numbers, decimals Introduction to algebraic fractions.	**U6 Area & Volume (13 Lessons)** Calculate the surface area & volume of prisms and cylinders. **Checkpoint 2** • Simplify & factorise expressions including basic quadratics • Substitution • Fraction calculations • FDP Problems • Algebraic fractions • Volume & surface area of prims & cylinders **U7 Percentage Multipliers (8 Lessons)** Use a calculator efficiently to solve a range of percentage problems including reverse percentage.	**U7 % Multipliers (5 Lessons)** Continued from HT2 **U8 Equations (12 Lessons)** Form and solve equations with unknown quantities on both sides. Begin to solve simple quadratic equations. **AP2 Assessment** • Checkpoint 1 & 2 topics • Percentage multipliers • Reverse percentages • Linear Equations - x on both sides • Form & solve equations	**U9 Ratio & Proportion (12 Lessons)** Understand how ratios are used to share quantities & solve problems in context. Explore the link between ratio & proportion through compound units. **U10 Angle Reasoning (12 Lessons)** Know angle facts & rules, allowing for multi-step geometric problems to be solved.	**U11 Averages (10 Lessons)** Determine which average to use to compare sets of data. Calculate averages from tables. **Checkpoint 3** • Simplifying ratio • Ratio problems • Unit conversion • Speed problems • Angles & parallel lines • Angles & polygons • Averages from a table • Average Problems **U12 Sequences (10 Lessons)** Explore number patterns including Fibonacci. Investigate sequences linked to visual patterns. Find & work with the nth term of a sequence. Explore geometric sequences.
Beyond The Curriculum	**The Phantom X:** This book uses humour and storytelling to explain algebra and index laws. **Rastrick STEM Club** Join to explore how maths is applied in science to explain how things work. Discover the practical uses of standard form	**NRICH Probability Games:** Interactive problems that explore fairness, randomness, and strategy. **MathsCity (Leeds):** You may visit to explore hands-on exhibits that bring algebraic thinking to life through puzzles & problem-solving.	**Home Decorating** Plan to redecorate a room a house, find the cost of laying new flooring & painting or wallpapering the walls. **YouTube** **The fascinating history of π** Explore what π is & the several thousand-year history to accurately calculate it.	**Rastrick Coding Club** Join to learn how to write fun computer programmes, making use of the thinking skills you develop through working with algebra. **Rastrick Chess Club** Through this ancient game, develop strategic thinking and logical thought.	**Rastrick Food Club** Join the RHS food club & made delicious food whilst exploring ratios & proportion through recipes. **Ratio Potion Game** A fun game where students mix potions using correct ratios to defeat enemies.	**Rastrick Athletic Club** Join RHS Track & Field! Track your performance using statistics & graphs. **YouTube Video** Fibonacci Sequence 1 Fibonacci Sequence 2 Videos exploring why the Fibonacci sequence is important in the real world.

Subject Overview Mathematics – Year 08 Building a Mathematician

Students will build on their Year 7 foundations by securing and stretching their understanding of core mathematical concepts. They will grow their skills as they begin to apply them to a range of real-life situations.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	**U1 Represent Number** **(10 Lessons)** Ordering decimals, solving problems with factors and multiples, & understanding cube numbers and cube roots. **U2 Four Operations** **(10 Lessons)** Use abstract methods to perform four operations without a calculator including x ÷ by powers of 10. **Checkpoint 1** • Ordering decimals • Square & cube numbers • Factors & multiples • + - x ÷ numbers • x ÷ by powers of 10 **U3 Directed Numbers** **(6 Lessons)** Develop your ability to + − × ÷ with directed numbers & apply to the real world. **U4 FDP Equivlance** **(2 Lessons)** See HT2 for details	**U4 FDP Equivlance** **(2 Lessons)** Compare & order fractions, decimals and percentages. Appreciate the use of this skill in the real world. **U5 Fraction Calculations** **(8 Lessons)** Apply four operations with fractions with growing confidence. **AP1 Assessment** • + - x ÷ directed numbers • Ordering directed numbers • Ordering FDP • + - x ÷ fractions **U6 Simplify & Solve** **(10 Lessons)** Building on Y7 algebra skills by manipulating more complex expressions & solve equations involving negative solutions. **U7 Ratio** **(5 Lessons)** Simplify & divide amounts using ratio from more real-life contexts.	**U7 Ratio** **(5 Lessons)** Continued from HT2 **U8 Proportion** **(5 Lessons)** Use proportion tables and the unitary method to solve real-life problems like determining the best value. **Checkpoint 2** • Simplify, expand & factorise expressions • Solve linear equations • Simplify ratio • Share by ratio • Best value problems **U9 Area & Perimeter** **(11 Lessons)** Building on geometry basics, Students will cover metric conversions, classifying shapes, finding areas of triangles & compound shapes.	**U10 Percentages** **(10 Lessons)** Use a calculator to work out percentage of amounts, increase or decrease using the unitary method. **AP2 Assessment** • Perimeter of 2D Shapes • Area of triangles • Area of compound shapes • Percentage of amount, increase & decrease **U11 Sequences** **(6 Lessons)** Explore number patterns including Fibonacci. Find & work with the nth term of a linear sequence. **U12 Averages & Spread** **(6 Lessons)** Solve problems with mean, median, mode & range. Find averages from a table.	**U12 Averages & Spread** **(6 Lessons)** Continued from HT4 **U13 Angles & Reasoning** **(10 Lessons)** Solve missing angles problems involving lines, points, and triangles. **U14 Representing Data** **(9 Lessons)** Solve problems with pictograms, dual & composite bar charts. Draw & interpret pie charts.	**U15 Volume** **(6 Lessons)** Explore 3D shapes & their nets. Understand the concept of volume. **U16 Probability** **(8 Lessons)** Explore the vocab. & calculations needed to describe likelihood, including combined events. **Checkpoint 3** • Linear sequences • Averages & range • Angles in triangles • Pie Charts • Writing probability **U17 Transformations** **(8 Lessons)** Identify line and rotational symmetry and performing reflections and rotations of 2D shapes.
Beyond The Curriculum	**Darts Game (Online)** Play darts whilst sharpening your skills with four operations **Bank Accounts** Explore bank statements to see how a balance can be positive (credit) or negative (debit).	**BBC Bitesize – Solving Equations KS3** Step-by-step guides and interactive quizzes. **Rastrick Coding Club** Learn how to write fun computer programmes, making use of the thinking skills you develop through working with algebra.	**Rastrick Food Club** Join the RHS Food Club & made delicious food whilst exploring ratios & proportion through recipes. **Ratio Potion Game** A fun game where students mix potions using correct ratios to defeat enemies.	**YouTube Video** Fibonacci Sequence 1 Fibonacci Sequence 2 Videos exploring why the Fibonacci sequence is important in the real world. **Percentage Games** Collection of games designed to improve understanding.	**Rastrick Athletics Club** Join RHS Track & Field! Learn to track your performance using statistics & graphs. **Rastrick Pokemon Club** Gotta catch 'em all? Join to explore and delve into the stats that set their skills apart.	**Vile Vendor Game** Beat the Vile Vendor! Use probability to win tricky deals. **MathsCity (Leeds):** You may visit & explore hands-on exhibits that bring spatial thinking to life through puzzles & problem-solving.