Subject Overview Mathematics – Year 7

Students will build on their work from primary school, gaining fluency with increasingly more varied and challenging types of number. They will gain a strong grounding in geometric and algebraic skills, as well as having plenty of opportunity to develop as confident problem solvers, able to articulate their mathematical reasoning.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	**U1 Prime Factors (14 Lessons)** Decompose numbers into their prime factors. Find and use the HCF and LCM. **U2 Directed Numbers (10 Lessons)** Understand + − × ÷ with directed numbers. **U3 Alegbra (12 Lessons)** Forming, simplifying, expanding & factorising algebraic expressions. **Checkpoint 1** • Prime factors • HCF & LCM • Calculations with directed numbers • Simplifying & factorising algebraic expressions	**U4 Ratio (15 Lessons)** Understand how ratios are used to share quantities. **U5 Fractions & Decimals (13 Lessons)** Use the equivalence of fractions and decimals. Order and calculate fluently with fractions. **Checkpoint 2** • Simplifying ratio • Sharing by ratio • Ordering fractions • + − × ÷ mix numbers • Convert between FDP .	**U6 Percentages (10 Lessons)** Convert between fractions, decimals and percentages. Calculate confidently with percentages. **U7 Equations (10 Lessons)** Form and solve multi-step algebraic equations using formal balancing. **U8 Estimating (8 Lessons)** Using rounding to find approximations to complex calculations **Checkpoint 3** • Percentage calculations • Expressing percentages • Solve linear equations • Round to d.p & s.f. • Estimating by rounding • Using a scientific calculator	**Y9 Measures (10 Lessons)** Measure lengths & angles accurately. Convert metric units. **U10 Data Graphs (8 Lessons)** Use a variety of graphs and charts to display data. **U11 Angle Reasoning (4 Lessons)** Know the basic angle facts and use them to solve geometric problems.	**U11 Angle Reasoning (6 Lessons)** Continued from HT4 **U12 Perimeter & Area (13 Lessons)** Find the area & perimeter of 2D shapes: rectangles, triangles, trapezia, circles. **U13 2D & 3D Shapes (8 Lessons)** Constructing 2D shapes & nets of 3D shapes and understand their special properties. **AP1 Assessment** • Percentages • Equations • Rounding & estimating • Metric conversions • Data graphs • Angle problems • Area & perimeter	**U13 2D & 3D Shapes (7 Lessons)** Continued from HT5. **U14 Averages (10 Lessons)** Compare sets of data using averages and measures of spread. **U15 Transformations (12 Lessons)** Rotate, reflect, translate and enlarge 2D shapes on a coordinate grid.
Beyond The Curriculum	**YouTube** Learn how prime numbers protect online data. Cryptography - YouTube Encryption Numberphile **Human Resource Machine** A game for IOS & Android. Understand how coding works. Makes use of ordering operation & logical thought.	**Eureka! Museum (Halifax)** You may visit& see interactive exhibits on science and maths, ideal for exploring ratio & proportions. **Rastrick Food Club** Join the RHS Food Club & make delicious food whilst exploring ratios & proportion through recipes.	**Rastrick Coding Club** Learn how to write fun computer programmes, making use of the thinking skills you develop through working with algebra. **Go supermarket shopping** Round the price of things, you buy and keep an estimate of how much you spend. (Suggested to do on next visit)	**RHS Gardening Club** Explore growing different plant types using your measuring skills. **Rastrick Textile Club** Imagine, design & make your own fashions. Your work with measurements is a key to success here.	**Paper Origami YouTube Instructions** Making a Cube Making a triangular prism Making a cone Making a tetrahedron Making other 3D shapes **Rastrick STEM Club** Explore the links between science & maths with shapes.	**Rastrick Pokemon Club** Gotta catch 'em all? Join to explore and delve into the stats that set their skills apart. **Rastrick Athletics Club** Join RHS Track & Field. Track your performance overtime using statistics & graphs.

Subject Overview Mathematics – Year 7 Building a Mathematician

Students will deepen their foundational mathematical knowledge, address misconceptions, and build confidence in core mathematical concepts. This will be achieved through a strong emphasis on the concrete-pictorial-abstract (CPA) approach to learning mathematics. This methodology will empower students to begin their journey towards becoming numerate citizens.

	Half Term 1	Half Term 2	Half Term 3	Half Term 4	Half Term 5	Half Term 6
Knowledge & Skills	**U1 Represent Number** **(14 Lessons)** Explore numbers: Order by place value, grasp factors, multiples, squares, and square roots. **U2 Four Operations** **(22 Lessons)** Use physical manipulatives & pictorial resources to perform four operations without a calculator including x ÷ by powers of 10. **Checkpoint 1** • + - x ÷ numbers • Order numbers • x ÷ by 10 & 100 • Factors & multiples • Square & square roots	**U3 HCF, LCM & Rounding** **(10 Lessons)** Recognize odd, even, prime numbers, HCF, LCM. Confidently round using place value. **U4 Directed Numbers** **(10 Lessons)** Understand + − × ÷ with directed numbers as well as ordering them. **U5 Order of Operations** **(5 Lessons)** Order of operations for real-life problems, understanding power and operation hierarchy. **Checkpoint 2** • Prime numbers • Rounding numbers • HCF & LCM • + - x ÷ directed numbers • Ordering operations **U6 Representing Data** **(5 Lessons)** See HT3 for details.	**U6 Representing Data** **(2 Lessons)** Draw and interpret data using tally charts, frequency tables, pictograms, and dual & composite bar charts. **U7 Ratio** **(13 Lessons)** Simplify & divide amounts using ratios. Represent using bar models. **U8 Proportion** **(8 Lessons)** Use understanding of direct proportion to solve problems like scaling up recipes. **Checkpoint 3** • Bar charts & pictograms • Frequency tables • Simplifying ratio • Sharing by ratio • Recipe problems **U9 FDP Equivlance** **(4 Lessons)** See HT4 for details	**U9 FDP Equivlance** **(16 Lessons)** Explore fractions & decimals: represent, simplify, convert, and grasp common equivalents visually. **U10 Percentages** **(6 Lessons)** Represent percentages visually, calculate percentage of amounts, increase or decrease with the aid of bar models	**U10 Percentages** **(6 Lessons)** Continued from HT4 **U11 Fraction Calculations** **(5 Lessons)** Understand how to add/subtract fractions pictorially with & with common denominators. **U12 Simplify & Solve** **(12 Lessons)** Explore algebra basics: write, simplify, expand expressions, substitute values, and solve linear equations. **AP1 Assessment** • Equivalent fractions • Mix numbers • FDP conversion • Calculate % • Witing % • Simplify expressions • Substitution • Linear equations	**U13 Area & Perimeter** **(10 Lessons)** Explore perimeter and area for 2D shapes: squares, rectangles, and parallelograms. **U14 Averages & Spread** **(9 Lessons)** Learn to calculate and interpret mode, median, mean, range, and compare data sets. **U15 Measurements** **(6 Lessons)** Master measurement: accurately draw lines, convert metric units, and understand 12/24-hour clocks. **U16 Angles & Reasoning** **(6 Lessons)** Draw & measure angles accurately. Solve missing angles problems on lines/points.
Beyond The Curriculum	KenKen **- Game Website** Number-placement game using all four operations. **Human Resource Machine** A game for IOS & Android. Understand how coding works. Makes use of ordering operation & logical thought.	**Go supermarket shopping** Round the price of things, you buy and keep an estimate of how you spend. (Suggested activity). **YouTube** Learn how prime numbers protect online data. Cryptography - YouTube Encryption Numberphile	**Eureka! Museum (Halifax)** You may visit & see Interactive exhibits on science & maths, ideal for exploring ratio & proportion. **Rastrick Food Club** Join the RHS Food Club & make delicious food whilst exploring ratios & proportion through recipes.	Landscaping game Online game designed you thinking proportionally whilst designing a park. Percentage Games Collection of online games designed to improve understanding.	**Rastrick Coding Club** Join & write fun computer programmes, making use of the thinking skills you develop through working with algebra. **Rastrick Chess Club** Join & through this ancient game, develop strategic thinking and logical thought.	**RHS Gardening Club** Join & explore growing different plant types using your measuring skills. **Rastrick Pokemon Club** Gotta catch 'em all? Join to explore and delve into the stats that set their skills apart.