KS3 – Year 8 Long Term Mapping

Subject Intent/ Aims: Subject Intent/ Aims

The mathematics curriculum aims to ignite curiosity and prepare students well for everyday life and future employment. Our mathematics curriculum gives students the opportunity to:

become fluent in the fundamentals of mathematics, through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.

reason mathematically by following a line of enquiry, conjecturing relationships and generalisations, and developing an argument, justification or proof using mathematical language.

solve problems by applying their mathematics to a variety of routine and non-routine problems with increasing sophistication, including break down problems into a series of simpler steps and preserving in seeking solutions.

can communicate, justify, argue and prove using mathematical vocabulary.

develop their character, including resilience, confidence and independence, so that they contribute positively to the life of the school, their local community and the wider environment.

The Year 8 curriculum builds on the consolidation and extension work completed in Year 7, concentrating on the skills and knowledge necessary to provide a solid foundation ahead of the GCSE programme of study.

Term:	Component:	Composite Skills:	Composite Knowledge:	Higher Order Knowledge:	Literacy / Numeracy / Cross Curricular links
Unit 1 (Aut 1)	Number • Integers • Negative Numbers • Special Number Fractions, decimals and percentages	• Use a calculator and ICT • Apply maths in real life context and solve problems • Understand Mathematical language • Identify misconceptions • Display fluency	• Directed number • Powers, Factors, Multiples, Primes and Roots • Indices (index rules) • Equivalence and ordering of fractions,	Prime factor decomposition	Binary (ICT)

		• Reason mathematically including written communication skills	decimals and percentages • Four operations (F,D,P) • Percentages • Percentage problems		
<u>Unit 2 (Aut 2)</u>	Algebra • Substitution • Coordinates and Graphs • Sequences Ratio and Proportion • Ratio and Proportion	• Use a calculator and ICT • Apply maths in real life context and solve problems • Understand Mathematical language • Identify misconceptions • Display fluency • Reason mathematically including written communication skills	• Substitution into formulae and expressions, including scientific formulae • Plot coordinates in all four quadrants • Draw a linear graph • Real life graphs • Quadratic, cubic and reciprocal graphs • Generate terms of a sequence and understand when a term is, or is not, part of a sequence • nth term of a linear sequence • Scale drawings • Ratio notation • KTC34: Equivalent ratios and fractions • Direct and inverse proportion	Exponential functions	Substitution into a formula (Science)

Unit 3 (Spr 1)	Number • Integers Algebra • Simplifying • Solving Equations • Inequalities Geometry and Measure • Angles	• Use a calculator and ICT • Apply maths in real life context and solve problems • Understand Mathematical language • Identify misconceptions • Display fluency • Reason mathematically including written communication skills	• Four operations (BIDMAS) • Understand equivalence • Order of operations • Form/solve expressions and equations • Simplify and manipulate algebraic expressions • Inequalities and number lines • Solving Inequalities (linear) • Angle facts	• Binomial Theorem	Programming (ICT)
Unit 4 (Spr 2)	Geometry and Measure • Transformations • Similarity	• Use a calculator and ICT • Apply maths in real life context and solve problems • Understand Mathematical language • Identify misconceptions • Display fluency	• Single and combined transformations • Translation using 2D vectors • Use column representation of vectors	Vectors (GCSE)	Forming geometric patterns (DT)

		• Reason mathematically including written communication skills	• Similar Shapes (lengths only)		
Unit 5 (Sum 1)	Number • Integers • Negative numbers • Decimals Geometry and Measure • Area, Perimeter and Volume	• Use a calculator and ICT • Apply maths in real life context and solve problems • Understand Mathematical language • Identify misconceptions • Display fluency • Reason mathematically including written communication skills	• Place value • Rounding and estimation • Units of measure • Area, perimeter and volume, including compound shapes • Problems involving area, perimeter and volume (including money problems)	• Conversion between measures (area and volume) using multipliers	• Units of measure (Science).
Unit 6 (Sum 2)	Geometry and Measure • Construction Data • Collecting data • Displaying data • Interpreting data	• Use a calculator and ICT • Apply maths in real life context and solve problems • Understand Mathematical language • Identify misconceptions • Display fluency • Reason mathematically including written communication skills	• Ruler and Compass constructions • Charts, tables and diagrams • Compare data sets • Averages	• Loci	• Technical drawings (ICT)

	Probability • Calculating probability • Interpreting probability		• Exhaustive probabilities • Single event probability • Diagrams to calculate probabilities • And/Or Rule		

SMSC	British Values	RSHE	Assessment
Cultural: As part of enrichment activities, students will investigate the uses of symmetry and Art in Rangoli and Islamic art. Statistical analysis of data that will enable students to understand results and representations of data in the news. **Spiritual:** Investigating the Fibonacci sequence. Using the findings to link to other curriculum areas e.g. the natural world.	**Democracy.** Use of proportion, ratio, fractions decimals and percentages to describe 'fairness'. Outside speaker delivering a two interactive sessions to key year groups on financial education. One session to ensure students understand the concept of credit and savings, the second to practice how to budget in later life as an adult. **The rule of law.** Interpreting and analysing the accuracy of statistics. Does	**Moral.** Examples of the moral development in mathematics include: • The trip to Bletchley Park shows the work that mathematicians contributed in WWII to help stop the spread of the Nazi ideals, and help the allies win the war. Discussions to take place about Turin, his ideas and how and why he was persecuted due to his sexuality? • History of Maths day for year 7 to show the role of males and females in the development of mathematics through the ages. **Social:** Participation in the UKMT Team Maths challenges across the year group. Participation in regional competitions pending performance. The art of origami and it's links with mathematics.	**Summative** Homework tasks to assess understanding in each area of the curriculum. Half termly assessments to measure progress and areas for improvement in topics covered so far. End of year examination covering all content.

	proportional representation in the UK electoral system ensure a 'fair' result?		**Formative** Frequent WWW/EBI feedback from the class teacher. Self/peer/teacher 'live' marking during lessons to adapt content during a lesson to keep the level of challenge high.

Adapted Curriculum Content:	**Adapted Curriculum Content:**	**Adapted Curriculum Content:**

Lower ability: • Recap column method for addition and subtraction • Recap column method for multiplication. • Recap bus stop method for division (short division) to give whole numbers only Higher ability: • Use reasoning to explain why BIDMAS mistakes occur • Understand powers and roots	Lower ability: • Use a calculator to evaluate questions including those with powers and roots • Use a calculator to answer worded problems writing all working out Higher ability: • Use a calculator to answer complex and multistep worded problems writing all working out • Calculator methods	Lower ability: • Recall place value • Recap rounding to nearest integer, 10, 100 and 1000 • Recap how o round to a given number of decimal places Higher ability: • Truncation • Find the limits of accuracy Find the error interval of a value
Adaptive Implementation Practices: White Rose units – Year 6 content/website SATS content (Year 6 standard, Year 6 Advanced) Taskmaster dominoes	**Adaptive Implementation Practices:** White Rose units – Year 6 content/website Taskmaster dominoes content (Year 6 standard, Year 6 Advanced)	**Adaptive Implementation Practices:** White Rose units – Year 6 content/website SATS content (Year 6 standard, Year 6 Advanced)