



Curriculum Overview

Curriculum Area: Mathematics

Year: 8

Year 8 Curriculum:

Autumn Term:

Autumn Term 1: Proportional Reasoning:

Ratio and Scale: Understand the meaning of ratio and various models to represent ratios. Learn to share in a ratio, use bar models, and simplify ratios. Explore links between ratio and fractions and understand the use of the circumference of a circle and gradients.

Multiplicative Change: Study the link between ratio and scaling, including direct proportion using graphs and context. Focus on conversion graphs and revisiting forms in graphical work. Use scale factors to find missing lengths in similar shapes.

Multiplying and Dividing Fractions: Extend understanding of multiplying and dividing fractions, building on prior knowledge. Use multiple representations to comprehend the underlying algorithms. Revisit fractions and decimals, emphasising integer operations and mixed numbers.

Autumn 2: Representations:

Working in the cartesian plane: Pupils will build on their knowledge of coordinates from KS2. They will formally study algebraic rules for straight lines, starting with parallel lines to the axes and progressing to more general forms. They will explore gradients and intercepts, with a focus on using equations to produce lines rather than interpreting m and c from given equations. Pupils will also appreciate the similarities and differences between sequences, lists of coordinates, and lines. Those following the higher strand may also explore non-linear graphs and midpoints of line segments.

Representing Data: Pupils will be introduced formally to bivariate data and the concept of linear correlation. They will extend their knowledge of graphs and charts from KS2 to include both discrete and continuous data. This will help them understand how to visually represent and analyse different types of data.

Tables and Probability: Focuses on reinforcing pupils' understanding of probability, building on the content from the Year 7 unit. The emphasis will be on sample spaces and the use of tables to represent these spaces. Students will review the outcomes of simple probability experiments, including concepts of randomness, fairness, and mutually exclusive outcomes. They will use appropriate language and properties to accurately analyse probability and statistics.

Spring Term:

Spring 1: Algebraic Techniques:

Brackets, Equations & Inequalities: Pupils will enhance their understanding of equivalence by exploring single brackets, factorising through common factors, and expanding two binomials. They will revisit solving equations, including those with brackets and unknowns on both sides, and learn to solve formal inequalities. The focus is on forming and solving equations rather than memorising methods, with an emphasis on understanding solutions and comparing inequalities with equations.

Sequences: Pupils will extend their learning from Year 7 by focusing on complex algebraic rules, finding the n th term of linear sequences, and recognising geometric sequences.

Indices: Pupils will become comfortable with expressions involving powers, interpreting algebraic notation, and applying precise mathematical language to solve problems, simplify expressions, and solve equations.

Fractions and Percentages: Pupils will focus on relationships between fractions and percentages, including decimal equivalents. They will work on percentage increase and decrease,



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Spring Term:

Spring 2: Developing Number:

Fractions and Percentages: Pupils will focus on relationships between fractions and percentages, including decimal equivalents. They will work on percentage increase and decrease, expressing one number as a fraction or percentage of another, and solving financial problems using both calculator and non-calculator methods.

Standard Index Form: Pupils will revisit and deepen their understanding of standard index form, including its application to negative and fractional indices. This builds on knowledge from Year 7, aiding in understanding notation and uses.

Number Sense: Pupils will revisit basic skills such as estimation, unit conversions, and solving problems involving time and calendar. The emphasis will be on using standard units, rounding numbers accurately, and applying these skills to practical contexts like mass, length, time, and money.

Summer Term:

Summer Term 1: Developing Geometry:

Angles in Parallel Lines and Polygons: Pupils will build on their KS2 understanding of angle notation and relationships, focusing on angles in parallel lines and polygons.

Area of Trapezia and Circles: Pupils will learn the formula for the area of a trapezium, extending knowledge gained in Year 7. They will also cover the formula for the area of a circle and apply this knowledge to more complex geometric problems.

Line Symmetry and Reflection: The focus will be on understanding and applying concepts of line symmetry and reflection, distinguishing them from rotation and translation. This ensures a deeper comprehension and ability to solve problems involving symmetry in different contexts.

Summer Term 2: Reasoning with Data:

The Data Handling Cycle: Pupils extend their understanding of statistics from primary school, focusing on using charts to compare distributions and avoid misleading representations. They will critique questionnaires and handle data collection issues through an extended project. This project aims to make students aware of data collection pitfalls and the difficulties of interpreting graphs and charts.

Measures of Location: Pupils will delve deeper into measures of central tendency (mean, median, mode) and spread (range, consideration of outliers). They will explore why and how each average is used, with higher strand students examining the mean from grouped frequency tables. The emphasis will be on comparing distributions using these statistical measures.



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Links to National Curriculum

Our curriculum for Year 8 is based on White Rose Maths Curriculum and has been adapted to meet the needs of our pupils. It aligns with the KS3 National Curriculum, building on KS2 knowledge and ensuring a smooth transition.

Pupils demonstrate their understanding and progressively build core knowledge and skills across strands: Number, Algebra, Ratio, Proportion and Rates of Change, and Geometry and Measures. Each unit integrates the key aims of developing fluency, reasoning mathematically, and problem-solving. This comprehensive approach ensures that pupils meet national standards and are equipped with a deep understanding and the ability to apply mathematical concepts confidently in various contexts, preparing them for advanced mathematical learning and real-world applications.

Knowledge and understanding of this curriculum will be assessed by:

Knowledge will be assessed using prior knowledge starters, allowing teachers to build on pupils' existing knowledge and address any gaps. Teachers will layer new knowledge on this foundation. During lessons, pupils' understanding will be assessed through whiteboard activities and questioning. Verbal feedback will be provided, and questions and modeling will be adapted to ensure comprehension.

At the end of each unit, pupils will take an assessment, which will be marked and reviewed to address any misconceptions before progressing. This ensures a solid understanding and readiness for subsequent learning topics.

Powerful Knowledge/Cultural Capital Opportunities

Mathematics is a creative and highly inter-connected discipline. It is essential to everyday life and has provided the solutions to some of history's most intriguing problems. Throughout Year 8 this curriculum equips pupils with robust mathematical skills, fostering fluency, reasoning, and problem-solving. Through topics like proportional reasoning, algebra, geometry, and statistics, pupils gain practical knowledge applicable to real-world scenarios, enhancing their analytical and critical thinking abilities for everyday decision-making and future academic pursuits.