Curriculum Overview

Curriculum Area: Mathematics Year: 7

Autumn 1: Algebraic Thinking

Pupils begin Year 7 by exploring the foundations of algebra through patterns and sequences. They describe, continue and generalise both linear and non-linear sequences, identify term-to-term rules and find missing terms. Through one- and two-step function machines and substitution, pupils move from numerical to algebraic representations and develop fluency with variables and operations. They use algebraic notation accurately, recognise expressions and equations, collect like terms, and solve one- and two-step linear equations using the principles of equality and equivalence. This unit encourages reasoning, generalisation and secure use of algebra to model relationships.

Autumn 2: Place Value and Proportion

Pupils consolidate and extend their understanding of the number system for integers and decimals. They read, write, compare and order numbers (including in standard form), and round to powers of ten, decimal places and significant figures. Estimation is used to check the reasonableness of results.
Fluency with the four operations is strengthened across integers and decimals, including multiplying and dividing by powers of ten and applying the order of operations.
Pupils also interpret and summarise data using averages and the range, explaining what these measures show in context.
By the end of the term, pupils can choose efficient methods, use rounding and estimation to judge accuracy, and justify their decisions.

Spring 1: Representing and Interpreting Data

Pupils learn to represent and interpret data with increasing sophistication. They construct and analyse pictograms, bar charts, dual and composite bar charts, and work with coordinates in the first quadrant. This leads to plotting and interpreting scatter graphs, describing correlation and drawing informal lines of best fit.
Pupils also read and create time-series graphs to analyse change over time and recognise non-linear relationships. These skills strengthen statistical literacy and support learning across the curriculum.

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Spring 2: Number, Proportion and Measure

Pupils deepen their understanding of fractions, decimals and percentages by representing common fractions on number lines and as diagrams, and converting fluently between forms (including values greater than one). They calculate fractions and percentages of amounts with and without a calculator, solve problems involving percentage change and finding the whole from a part, and apply directed number and order of operations in multi-step calculations.

Finally, pupils connect this learning to measurement by converting metric units, and by calculating perimeter and area of rectangles, parallelograms, triangles and trapezia, applying results to increasingly demanding problems.

Summer 1: Speed, Distance and Time; Properties of Number

Pupils connect number and graphs through kinematics contexts. They convert between time units, use and rearrange the speed–distance–time relationship, and solve multi-step problems from tables, timetables and calendars. Pupils interpret and draw distance–time graphs and determine speed from gradients.

In parallel, they study properties of number: multiples, factors and primes; powers and roots; and efficient methods for finding highest common factor and lowest common multiple (including with Venn diagrams). They use factorisation to simplify calculations and to reason about structure.

Summer 2: Adding and Subtracting Fractions; Angles and Polygons

Pupils develop fluency with fractions by simplifying, converting between improper fractions and mixed numbers, and adding and subtracting with the same, related and unrelated denominators. They extend to mixed numbers and make links to decimals and introductory algebraic fractions.

In geometry, pupils draw and measure accurately, use geometric notation, and apply angle facts (around a point, on a straight line and vertically opposite). They use properties of triangles and quadrilaterals, explore parallel and perpendicular lines, work with angles in parallel lines and polygons, and construct simple proofs.

By the end of Year 7, pupils can explain and justify methods, connecting number, algebra and geometry.

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Links to National Curriculum

Our curriculum for Year 7 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 7, pupils will develop critical thinking, problem-solving skills, and logical reasoning. By exploring sequences, algebra, place value, and proportions, pupils learn to make connections between different mathematical ideas. This comprehensive understanding enables them to tackle complex problems, interpret data, and apply mathematical reasoning in real-life situations. The curriculum's emphasis on deep understanding, fluency, and reasoning prepares students for higher-level mathematics and empowers them with skills essential for academic and everyday success.