



# Curriculum Overview

Curriculum Area: Mathematics

Year: 7

## Year 7 Curriculum:

### **Autumn Term:**

#### **Autumn 1: Algebraic Thinking:**

**Exploring Sequences:** Focus on understanding sequences using diagrams and lists, recognising arithmetic and geometric sequences, and using technology to explore patterns.

**Understanding and Using Algebraic Notation:** Develop a deep understanding of algebraic forms, using function machines, bar models, and letter notation. Emphasising substituting values, rearranging, and simplifying expressions, and generating sequence terms from rules.

**Equality and Equivalence:** Introduce forming and solving one-step linear equations, emphasising inverse operations and the difference between equality and equivalence. Use calculators for solving equations and simplify expressions by collecting like terms.

#### **Autumn 2: Place Value and Proportion:**

**Place Value and Ordering:** Focus on exploring integers up to one billion and decimals to hundredths. Emphasis on understanding the number system, rounding, and using place value for various numerical forms.

**Fraction, Decimal and Percentage Equivalence:** Develop a deep understanding of the links between fractions, decimals, and percentages. Learn to convert fluently between these forms and apply them in real-life contexts. Skills include expressing quantities as fractions of others, defining percentages, comparing quantities using percentages, and interpreting pie charts.

### **Spring Term:**

#### **Spring 1: Application of Number:**

**Solving problems with addition & subtraction:** Build on formal methods of addition and subtraction, applying these skills to solve problems drawn from various contexts such as time, money, and data interpretation. Emphasis on significant figures and equations.

**Solving problems with multiplication & division:** Study of multiplication and division, including forming and solving two-step equations. Explore unit conversions and multiplication by 10, 100, and 1000. Emphasis on solving problems involving area of common shapes and selecting the correct operation.

**Fractions and percentages of amounts:** Work on fractions and percentages of quantities, building on prior knowledge. Study the use of fractions, decimals, and percentages as operators.

#### **Spring 2: Directed Number and Fractional Thinking:**

**Directed Number:** Extend and deepen understanding of directed numbers (positive and negative integers) using multiple representations and contexts. Introduce two-step equations and emphasize solving increasingly complex problems. Focus on using formal written methods, understanding relationships between operations, and simplifying algebraic expressions.

**Fractional Thinking:** Build on understanding of fractions, decimals, and percentages. Emphasize equivalence, addition, and subtraction of fractions with denominators that are multiples of each other. Focus on expressing quantities as fractions of others and using appropriate calculation strategies for increasingly complex problems.

### **Summer Term:**

#### **Summer 1: Lines and Angles:**

**Construction, Measurement and Notation:** Building on KS2 skills using rulers, protractors, and other tools to construct and measure increasingly complex diagrams. Learn the use of mathematical notation, including letter notation, hatch marks for parallel lines, and arrows for parallel lines. Practice drawing and measuring angles and interpreting scale drawings.

**Geometric Reasoning:** Develop geometric language, names, and properties of triangles and quadrilaterals, and rules of angle reasoning. Use these properties to solve complex problems. The higher strand focuses on investigating and using parallel line rules. Study the properties of shapes, including rotational symmetry, angle facts, and relationships between parallel lines and angles.

#### **Summer 2: Reasoning with Number:**

**Developing Number Sense:** Review and extend mental strategies, focusing on using known facts to derive new ones. Simplify complex calculations and extend skills to known algebraic facts.

**Sets and Probability:** Study probability with an emphasis on FDP equivalence. Learn about sets, set notation, and systematic listing strategies. Explore theoretical sample spaces, the infinite nature of number sets, and calculate probabilities of events.

**Prime Numbers and Proof:** Revisit factors and multiples to introduce prime numbers. Use Venn diagrams to solve HCF and LCM problems. Form and test conjectures using number properties and counterexamples.



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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.