Mathematics Year 7 Curriculum Overview

Year 7 Overview	Students will develop their mental and problem-solving skills. This will be done whilst studying the 5 main strands of maths – number, ratio and proportion, algebra, shape and measure and data handling. All 5 areas will be applied to real life situations to develop and enhance their ability to be able to apply the skills learnt. Students will strengthen, deepen and extend their Mathematical knowledge developed during KS2 beginning with basic algebra such as sequences, notation and equations. This will enable pupils to transfer their thinking from just numerical to algebraic too. A significant proportion of the year is spent on number to ensure pupils can use efficient and effective methods to fluently perform calculations. These key number topics such as calculating with fractions will be revisited again during starter activities in later years to ensure pupils retain these key skills. The summer term will be spent studying geometry, data handling and proof to ensure pupils have had sufficient exposure to basic rules and principles such as the sum of angles around a point or in a polygon. This will provide the building blocks for future learning.

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Week Number	Themes/ Topics	Key Knowledge & Skills	Key Assessments
1-6 (Autumn 1)	Unit 1 - Place Value, Ordering & rounding	This unit develops students' understanding of number structure, place value, and numerical representation. Learners begin by reading and writing integers and decimals, then progress to comparing, ordering, and positioning numbers on number lines. The unit also introduces rounding to powers of 10, decimal places, and significant figures, and extends into powers of 10 and standard form for very large and very small numbers. These foundational skills support fluency in numerical reasoning and prepare students for future work in estimation, scientific notation, and data interpretation. Skills developed • Write integers in numerals and words • Intervals on a number line • Compare and order integers • Place value for decimals • Decimals on a number line • Compare and order decimals • Round to powers of 10 • Round to the nearest integer • Round to decimal places • Powers of 10 (E) • Numbers greater than 1 in standard form (E) • Negative powers of 10 (E) • Numbers between 0 and 1 in standard form (E)	Mathswhizz baseline assessment Unit 1: End of unit assessment DIRT following assessment

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	Unit 2 - Rounding & Estimation	This unit introduces students to rounding and estimation, focusing on significant figures and their application in calculations. Learners begin by rounding numbers to 1 and 2 or more significant figures, then use these skills to estimate answers and solve problems in context. The unit concludes with understanding and using error interval notation to express the range within which a rounded value may lie. These skills support accuracy, efficiency and reasoning in mathematical problem-solving. Skills developed • Round to 1 significant figure • Round to 2 or more significant figures • Estimate answers to calculations • Solve problems with estimation • Understand and use error interval notation (E)	Arithmetic baseline Unit 2: End of unit assessment DIRT following assessment
	Unit 3 - Four Operations	This unit consolidates and extends students' understanding of the four operations—addition, subtraction, multiplication and division—with both integers and decimals. Learners develop fluency in formal written methods, mental strategies, and the use of place value. The unit also introduces multiplication and division by powers of ten, decimals, and the order of operations, preparing students for more complex numerical and algebraic reasoning. Skills developed • Add and subtract integers • Add and subtract decimals • Multiply and divide by 10, 100 and 1000 • Multiply by 0.1 and 0.01 (E) • Multiply integers • Divide integers • Multiply decimals • Divide decimals by integers • Divide by a decimal (E) • Order of operations	Unit 3: End of unit assessment DIRT following assessment

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	Unit 4 - Sequences	This unit introduces students to sequences, focusing on identifying patterns, describing term-to-term and position-to-term rules, and distinguishing between linear and non-linear sequences. Using visual and concrete representations, students develop reasoning skills and mathematical vocabulary, laying out the foundation for future algebraic work. Skills developed • Describe and continue sequences • Find the next term(s) • Linear and non-linear sequences • Continue linear sequences • Continue non-linear sequences • Term-to-term rules • Find missing terms (E)	Unit 4: End of unit assessment DIRT following assessment
7-13 (Autumn 2)	Unit 5 - Directed Number	In this unit, students begin working with negative numbers on a number line, building on what they learned in primary school. Teachers use real-life examples—such as temperatures below zero and places that are above or below sea level—to help students understand the concept. Students learn that negative numbers are **less than zero**, while positive numbers are **greater than zero**. They also explore how positive and negative numbers are positioned on a number line, noticing patterns such as *–2 and 2 being the same distance from zero*. To avoid confusion later on, we refer to numbers like –2 as **"negative two"** rather than "minus two," which is linked to subtraction. Students practise counting with negative numbers, including crossing zero, and work with simple sequences such as **5, 0, –5, –10** to build confidence Skills Developed:	Unit 5: End of unit assessment DIRT following assessment

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		• Directed numbers and number lines • Compare and order directed numbers • Calculations that cross zero • Directed number and zero pairs • Add directed numbers • Subtract directed numbers • Multiply and divide directed numbers • Order of operations with directed numbers • Use a calculator with directed numbers	
	Unit 6 - Understand and use algebraic notation	This unit introduces students to algebraic notation through the use of function machines and substitution. Beginning with numerical operations, learners progress to interpret and construct algebraic expressions, identifying functions, and substituting values into one- and two-step expressions. The unit builds fluency in using formal algebraic notation and understanding the relationships between operations, laying the groundwork for solving equations and working with formulae. Skills Developed • 1-step function machines (number) • 1-step function machines (algebra) • Find a function (one step) • Substitution (one step) • 2-step function machines (number) • 2-step function machines (algebra) • Find a function (two step) • Substitution (two step)	Unit 6: End of unit assessment DIRT following assessment

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	Unit 7 - Expressions & Equations	This unit develops students' understanding of algebraic expressions and equations. Learners explore the concepts of equality and equivalence, identify and collect like terms, and solve one- and two-step equations using inverse operations. The unit builds fluency in algebraic notation and prepares students to manipulate expressions and solve equations in a variety of forms. Skills Developed • Equality and equivalence • Related facts • Like and unlike terms • Collect like terms • Solve 1-step equations (+/-) • Solve 1-step equations (x/÷) • Solve 2-step equations	Unit 7: End of unit assessment DIRT following assessment
14-18 (Spring 1)	Unit 08 - Averages and Range	This unit introduces students to the concept of averages and measures of spread. Learners explore the mode, mean, median and range, understanding how each summarises or describes a data set. Through practical examples and problem-solving, students learn to calculate and interpret these measures, compare their usefulness, and apply them in context. The unit builds foundational statistical skills that support future work with data representation and analysis. Skills developed • Mode • Mean • Median • Range • Solve problems with averages and range	Unit 8: End of unit assessment DIRT following assessment

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	Unit 09 - Graphing Data	In this unit, students learn how to construct and interpret **pictograms**, a visual way of showing data that they first met in primary school. They begin with simple examples where each symbol in the pictogram stands for one or two items. To support their understanding, students may use counters and pictogram templates before moving on to drawing their own symbols. Once they are confident using whole symbols, students are introduced to pictograms that include **half symbols**, helping them represent numbers that aren't exact multiples of the key. As their confidence grows, they progress to pictograms that use different keys and include **fractions of symbols**, such as quarter or three-quarter symbols. Students may also practise creating pictograms using information from a **tally chart**, helping them connect different methods of recording data. Skills Developed: • Pictograms • Bar charts • Dual bar charts • Composite bar charts • Coordinates in the first quadrant • Scatter graphs • Correlation • Lines of best fit • Time series graphs • Non-linear relationships	Unit 9: End of unit assessment DIRT following assessment
	Unit 10 – Fractions, Decimals & Percentages	In this unit, students learn to recognise **tenths and hundredths** using visual diagrams. They use number lines to see that tenths represent a whole divided into **ten equal parts**, and they explore how **ten hundredths are equal to one tenth**. Students also work with a **hundred square**, where the whole grid represents 1. This helps them understand that each small square is worth **0.01 (one hundredth)**, allowing them to make clear connections between tenths and hundredths.	Unit 10: End of unit assessment DIRT following assessment

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		Throughout the unit, students practise showing these values in different ways: by completing **visual diagrams**, and by writing the numbers in both **numerals and words**. This supports their overall understanding of place value and decimals. Skills developed: • Represent tenths and hundredths • Number lines with fractions and decimals • Tenths, hundredths, fifths and quarters • Eighths and thousandths • Understand percentages • Convert simple fractions, decimals and percentages • Fractions as diagrams • Fractions on a number line • Equivalent fractions • Compare and order fractions • Fractions as division • Convert fractions, decimals and percentages • Fractions, decimals and percentages greater than 1 (E)	
19-24 (Spring 2)	Unit 11 - Fraction & Percentage of Amounts	In this unit, students learn how to calculate a **fraction of an amount**, building on what they covered in primary school. They begin by working with **unit fractions** (fractions with a numerator of 1). Students learn that the **denominator** tells them how many equal parts the whole amount must be divided into. Once they are confident with unit fractions, they move on to **non-unit fractions**, applying the same ideas. Teachers often use **bar models** to help students visualise the process. These diagrams support their understanding by showing how the total is split into equal parts and how many of those parts are needed. Students also apply this skill to **real-life problems**, where they must decide which calculations are needed. Calculators may be used where appropriate.	Unit 11: End of unit assessment DIRT following assessment

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		Skills Developed • Fraction of an amount • Use a fraction to find the whole • Percentage of an amount (non-calculator) • Percentage of an amount (calculator) • Percentage increase and decrease • Use a percentage to find the whole (E) • Solve problems with fractions and percentages greater than 1 (E)	
	Unit 12 - Perimeter & Area	In this unit, students build on their primary-school learning about **metric units of length and distance**, preparing them to use these skills in more complex problem-solving later on. They begin by identifying the different metric units used to measure length—such as **millimetres, centimetres, metres and kilometres**—and choosing the most suitable unit for different objects or distances. Teachers draw attention to the **relative size** of each unit so students can decide whether they need to **multiply or divide** when converting between them. Students also learn how the **prefix** of each unit gives a clue about the size of the measurement. For example: • *milli-* means *one thousandth* • *centi-* means *one hundredth* • *kilo-* means *one thousand* These meanings help students understand the scale of each conversion. For those ready for an extra challenge, students may also convert very small units such as **millimetres to micrometres or nanometres**, supporting a deeper understanding of metric relationships. Skills Developed: • Convert metric units of length • Perimeter of a polygon	Unit 12: End of unit assessment DIRT following assessment

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		• Perimeter of a compound shape • Area of rectangles and parallelograms • Area of a triangle • Area of a trapezium • Solve problems with perimeter and area • Form expressions with perimeter and area (E)	
25-30 (Summer 1)	Unit 13 - Speed, Distance & Time	In this unit, students learn how speed, distance and time are connected using the key formula *speed* = *distance* ÷ *time*. They practise working out any of the three by rearranging the formula and by using real-life examples such as walking, running or travelling by car. Children also learn to convert between units like metres and kilometres or minutes and hours so they can use the formula correctly. Throughout the topic, they solve practical problems, build confidence with proportional reasoning, and understand how these ideas apply to everyday journeys. Skills Developed: • Convert between milliseconds, seconds, minutes and hours • Convert between hours, days and years • Fractions of time • Solve problems with tables and timetables • Solve problems with time and the calendar • Calculate speed • Calculate time and distance • Solve problems with speed, distance and time • Interpret distance-time graphs • Draw distance-time graphs • Calculate speed from a distance-time graph (E)	Unit 13: End of unit assessment DIRT following assessment
	Unit 14 - Properties of Number	In this unit, students explore key number properties to strengthen their understanding of how numbers work, including factors, multiples, prime numbers, highest common factors (HCF) and lowest common multiples (LCM). They learn how to break numbers into their prime factors using factor trees, recognise square and cube numbers, and understand how powers work. Students also build confidence with divisibility rules and use these	Unit 14: End of unit assessment DIRT following assessment

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		ideas to simplify calculations and solve problems. This topic helps them develop solid number sense so they can spot patterns, check answers more easily, and use efficient methods in later maths topics. Skills Developed • Multiples • Factors • Prime numbers • Write a number as a product of prime factors • Square, cube and triangular numbers • Square roots and cube roots • Explore higher powers and roots (E) • Highest common factor (HCF) • Lowest common multiple (LCM) • HCF and LCM from a Venn diagram (E) • Use factors to simplify calculations (E)	
31-38 (Summer 2)	Unit 15 - Adding & Subtracting Fractions	In this unit, students learn how to add and subtract fractions by finding common denominators so the fractions have the same sized parts before combining them. They practise working with proper fractions, improper fractions and mixed numbers, and learn how to convert between these forms when needed. Students also use models such as fraction bars or diagrams to understand why denominators must match, helping them build confidence with more abstract calculations. Throughout the topic, they solve real-life problems and develop strong fraction fluency that supports later work with ratios, equations and algebra.	Unit 15: End of unit assessment DIRT following assessment

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		Skills Developed • Simplify a fraction • Convert between mixed numbers and improper fractions • Add and subtract fractions with the same denominator • Add and subtract with fractions and integers • Add and subtract fractions where denominators share a simple common multiple • Add and subtract fractions with any denominator • Add and subtract improper fractions and mixed numbers • Use equivalence to add and subtract decimals and fractions (E) • Add and subtract simple algebraic fractions (E) • Substitution and solving equations with fractions (E)	
	Unit 16 - Angles & Polygons	In this unit, students learn how to identify, measure and calculate angles, including using key facts such as angles on a straight line, around a point and in triangles. They explore different types of polygons, understand how many sides they have, and use interior and exterior angle rules to describe their properties. Students also practise reasoning about shapes, spotting patterns and solving problems that involve missing angles in diagrams. This unit helps build strong spatial understanding and prepares students for more complex geometry in later years. Skills Developed • Draw and measure lines and angles • Understand and use geometric notation • Angles around a point • Angles on a straight line • Vertically opposite angles • Recognise and name polygons • Angles in a triangle • Angles in a quadrilateral • Solve problems with angles • Parallel and perpendicular lines	Unit 16: End of unit assessment DIRT following assessment

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		• Angles in parallel lines (E) • Angles in a polygon (E) • Simple proofs (E)	