



## Year 7 Mathematics Curriculum Overview

Please note that the placements of each unit are approximate.

|        | Units and Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| Autumn | <p><b>Unit 1 – Analysing Data</b></p> <ul style="list-style-type: none"><li>• classify and know the differences between primary, secondary, discrete and continuous data</li><li>• understand how to reduce bias in sampling and questionnaires</li><li>• calculate the mean, mode, median and range from a list of data</li><li>• choose the most appropriate average for a set of data</li><li>• recognise the advantages and disadvantages between measures of average</li><li>• compare sets of data using averages and the range</li></ul> <p><b>Unit 2 – Number Skills</b></p> <ul style="list-style-type: none"><li>• solve problems using mental and written strategies for multiplication and division</li><li>• recall prime numbers between 1 and 100</li><li>• express an integer as the product of its prime factors including in index form</li><li>• calculate with squares, cubes, square roots and cube roots including problems with BIDMAS</li><li>• know the difference between <math>-5^2</math> and <math>(-5)^2</math></li><li>• estimate the values of squares, cubes, square roots and cube roots</li><li>• add, subtract, multiply and divide with negative numbers</li></ul> <p><b>Unit 3 – Introducing Algebra</b></p> <ul style="list-style-type: none"><li>• use the laws of indices for multiplying and dividing to evaluate numbers expressed as powers</li><li>• recall that any number raised to the power of zero is 1</li><li>• multiply and divide algebraic expressions including those involving powers</li><li>• raise an algebraic expression involving powers to another power</li><li>• simplify expressions by collecting like terms</li><li>• expand single brackets</li><li>• factorise linear expressions</li></ul> <p><b>Unit 4 – Multiplicative Reasoning</b></p> <ul style="list-style-type: none"><li>• solve complex problems involving ratio</li><li>• solve simple word problems involving ratio and direct proportion</li><li>• solve simple word problems involving ratio and inverse proportion</li><li>• solve problems involving ratio and proportion using a unitary method</li><li>• solve best-buy problems</li><li>• convert between metric and imperial units</li></ul> |

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|        | <p><b>Unit 5 – Angles and Properties of Shapes</b></p> <ul style="list-style-type: none"> <li>• know that the sum of angles in a triangle is <math>180^\circ</math></li> <li>• use the properties of isosceles triangles and equilateral triangles to calculate missing angles</li> <li>• work out unknown angles in a triangle by forming and solving simple linear equations</li> <li>• know the sum of angles in a quadrilateral is <math>360^\circ</math></li> <li>• work out unknown angles in a quadrilateral by forming and solving simple linear equations</li> <li>• identify alternate, corresponding and co-interior angles</li> <li>• work out unknown angles involving parallel lines by forming and solving simple linear equations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Spring | <p><b>Unit 6 – Decimals and Percentages</b></p> <ul style="list-style-type: none"> <li>• round to significant figures</li> <li>• estimate calculations by rounding to significant figures</li> <li>• multiply a decimal by a decimal</li> <li>• divide a decimal by a whole number or by a decimal</li> <li>• calculate percentages of amounts using multipliers</li> <li>• calculate percentage increases and decreases using multipliers</li> <li>• use percentages in real-life situations including percentages greater than 100%</li> </ul> <p><b>Unit 7 – Forming and Solving Linear Equations</b></p> <ul style="list-style-type: none"> <li>• change the subject for simple equations</li> <li>• know the difference between expressions, formulae, equations and identities</li> <li>• form and solve two-step linear equations involving brackets</li> <li>• form and solve two-step linear equations involving fractions</li> <li>• form and solve linear equations involving variables on both sides</li> <li>• solve simple equations involving <math>x^2</math> and <math>x^3</math></li> <li>• use trial and improvement to find solutions to one decimal place</li> <li>• form and solve equations from contextual situations including those involving angles but not area or perimeter</li> </ul> <p><b>Unit 8 – Constructions</b></p> <ul style="list-style-type: none"> <li>• draw ASA and SAS triangles accurately using a ruler and protractor</li> <li>• draw SSS triangles accurately using a ruler and compasses</li> <li>• draw equilateral triangles using a ruler and compasses</li> <li>• draw diagrams to scale</li> <li>• bisect angles and lines using a ruler and compasses</li> <li>• construct a 60-degree angle using a ruler and compasses</li> <li>• construct a 30-degree angle using a ruler and compasses</li> <li>• construct perpendicular lines using a ruler and compasses</li> <li>• construct a 45-degree angle using a ruler and compasses</li> <li>• draw plans and elevations of 3D solids</li> </ul> |

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|        | <p><b>Unit 9 – Fractions</b></p> <ul style="list-style-type: none"> <li>• work out fractions of amounts including in real-life situations</li> <li>• convert hours and minutes into a fraction</li> <li>• convert fractions of time into hours and minutes</li> <li>• enter time as a mixed number into a calculator</li> <li>• problem solve by adding, subtracting, multiplying and dividing fractions and mixed numbers, and dividing integers by fractions</li> </ul> <p><b>Unit 10 – Displaying Data</b></p> <ul style="list-style-type: none"> <li>• draw two-way tables</li> <li>• find missing values in two-way tables that are partially complete</li> <li>• identify the mean, mode, median and range from an ungrouped frequency table</li> <li>• draw scatter graphs</li> <li>• draw a line of best fit and understand what these represent</li> <li>• describe the relationship between two sets of data</li> <li>• plot and interpret time series graphs</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Summer | <p><b>Unit 11 – Perimeter, Area and Volume</b></p> <ul style="list-style-type: none"> <li>• calculate the area of trapeziums</li> <li>• solve problems involving the volume of a cube or cuboid</li> <li>• calculate the volume of prisms</li> <li>• calculate the surface area of a cube or cuboid</li> <li>• calculate the surface area of L-shaped prisms</li> <li>• calculate the surface area of prisms</li> <li>• convert between metric measures for volume and area</li> </ul> <p><b>Unit 12 – Connecting Linear Sequences and Graphs</b></p> <ul style="list-style-type: none"> <li>• find the <math>n</math>th term of a linear sequence</li> <li>• use the <math>n</math>th term of a linear sequence to generate terms</li> <li>• make explicit links between linear sequences and linear graphs</li> <li>• plot straight-line graphs using a table of values</li> <li>• identify the <math>y</math>-intercept of a straight-line by using its graph</li> <li>• recognise straight-line graphs parallel to the axes</li> <li>• recognise graphs of <math>y = x</math> and <math>y = -x</math></li> <li>• work out the midpoint of a line segment</li> </ul> <p><b>Unit 13 – Transformations</b></p> <ul style="list-style-type: none"> <li>• carry out and describe translations using column vectors</li> <li>• carry out and describe reflections</li> <li>• carry out and describe rotations of 2D shapes about a centre of rotation</li> <li>• carry out and describe enlargements of a shape by a positive integer scale factor with and without a centre</li> </ul> |