Year 7 Mathematics Mastery Programme of Study

Autumn 1 ~ place value, addition and subtraction

Unit 1 - place value (1)	• Read and write whole numbers in figures and words • Multiply, and divide, any whole number by 10, 100, 1000, or 10 000 • Round whole numbers to the nearest 1000, 100 or 10
Unit 2 & 3 – Addition and subtraction (2)	• Use mental strategies • Add and subtract using formal algorithms • Calculate and work with **perimeters** • Model solve word problems
Unit 4 – Addition and subtraction of decimals (2)	• Understand decimal notation and place values • Read and write decimals in figures and words • Convert between decimals and fractions where the denominator is a factor of 10 or 100 • Use the number line to display decimals and round decimals to the nearest whole number, to 1 or 2 decimal places • Use correctly the symbols <, > etc. and the associated language to order a set of decimals • Multiply and divide decimals by 10, 100, 1000, or 10 000 • Solve word problems involving the addition and subtraction of money in decimal notation • Use written methods in column format for addition and subtraction of decimals • Extend existing mental calculation to include decimals • Calculate the **perimeter** of rectangles, squares and rectilinear figures

Autumn 2 ~ Multiplication and division

Unit 5, 6 & 7 – multiplication and division (5)	• Use multiplication facts to solve mental calculations • Use the terms 'product', 'multiple' and 'LCM' • Understand and use the column method to multiply integers and decimals • Divide whole numbers and decimals by whole numbers • Use the terms 'quotient', 'remainder', 'factor', 'HCF' • Represent multiplication word problems using bar models • Find the **area** of a rectangle and triangle • Solve problems involving length, perimeter and area • Estimate answers in calculations and check that results are reasonable • Measure **time**, calculate with time and solve time word problems • Find the **mean average**, interpreting average as "total amount ÷ number of items" and solve word problems involving average

Spring 1 ~ 2D shapes

Unit 8 – Working with units (1)	• Record and order measurements using decimal notation
	• Estimate and/or measure:
	  ○ length in kilometres (km) /metres (m)/ centimetres (cm)/ millimetres (mm)
	  ○ mass in kilograms (kg) /grams (g)
	  ○ volume of liquid in litres (l) / millilitres (ml)

Unit 9 – Angles (1)	• Draw and measure acute and obtuse angles reliably to the nearest degree • Estimate the size of any given angle • Recognise acute, right, obtuse and reflex angles • Know and use the fact that the angles round a point total 360°, that angles on a straight line total 180°, and that vertically opposite angles are equal
Unit 10 & 11 – Triangles and quadrilaterals (2)	• Classify triangles and quadrilaterals according to their properties • Use a ruler and protractor to construct triangles and quadrilaterals from given data • Know and use the fact that the sum of interior angles of a triangle is 180° • know and use the fact that the interior angles of a quadrilateral sum to 360° • Solve problems involving coordinates in the first quadrant
Unit 12 Symmetry and tessellation (1)	• Identify lines of symmetry in any shape • Identify the order of rotational symmetry in any shape • Create shapes given details of their symmetries • Investigation and create tessellations

Spring 2 ~ Fractions

Unit 13 – Understand and use fraction (2)	• Represent fractions using area diagrams, bar models and number lines • Recognise and name equivalent fractions • Convert fractions to decimals • Convert terminating decimals to fractions in their simplest form • Convert between mixed numbers and improper fractions • Compare and order numbers • Convert simple fractions and decimals to percentages • Express one quantity as a fraction of another
Unit 14 – Fractions of amounts (1)	• Find a fraction of a set of objects or quantity • Find the whole given a fraction
Unit 15 – Multiplying and dividing decimals (2)	• Multiply a whole number or fraction by a whole number or fraction • Multiply a mixed number and a whole number • Divide a whole number or proper fraction by a whole number or proper fraction

Summer 1 ~ Algebra

Unit 16 – Order of operations (2)	• Carry out combined operations involving all four operations • Understand and use brackets • Use simple index notation
Unit 17 – Introduction to algebra (2)	• Recognise and continue sequences • Represent an unknown number using a letter • Write and understand simple algebraic expressions • Substitute numerical values into formulae and expressions • Collect like terms and simplify expressions • Multiply out brackets, identify and take out common factors to factorise • Recognise that different-looking expressions may be identical and prove simple algebraic identities

Unit 18 – Algebraic generalisation project

Summer 2 ~ Percentages and handling data

Unit 19 – Percentages (2)	• Understand percentage as a fractional operator with denominator of 100 • Express a part of a whole as a percentage • Convert between fractions, decimals and percentages • Find fractions and percentages of given quantities • Find the whole given a part and the percentage • Increasing and decreasing by a percentage

Unit 20 – Handling data (2)	• Understand the difference between types of data
	• Construct and interpret
	  ○ Tables (including tally and two way)
	  ○ Bar charts (including comparative and composite)
	  ○ Pictograms
	  ○ Line graphs
	• Read and interpret pie charts
	• Draw pie charts from raw data
	• Explore misleading graphical representations

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