

Year 7 Mathematics Mastery Programme of Study ARMs September 2019

Autumn 1 ~ place value, addition and subtraction

Unit 1 - place value (1)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> Understand decimal notation and place value 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 & 8 multiplication and division (5)	<ul style="list-style-type: none"> 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
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Spring 1 ~ 2D shapes

Unit 9 – Working with units (1)	<ul style="list-style-type: none"> Record and order measurements using decimal notation Estimate and/or measure: <ul style="list-style-type: none"> 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 10 – Angles (1)	<ul style="list-style-type: none"> 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 11 & 12 – Triangles and quadrilaterals (2)	<ul style="list-style-type: none"> 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 13 Symmetry and tessellation (1)	<ul style="list-style-type: none"> Identify lines of symmetry in any shape Identify the order of rotational symmetry in any shape Create shapes given details of their symmetries Investigate and create tessellations
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Spring 2 ~ Fractions

Unit 14 – Understand and use fraction (2)	<ul style="list-style-type: none"> 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 15 – Fractions of amounts (1)	<ul style="list-style-type: none"> Find a fraction of a set of objects or quantity Find the whole given a fraction
Unit 16 – Multiplying and dividing decimals (2)	<ul style="list-style-type: none"> 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 17 – Order of operations (2)	<ul style="list-style-type: none"> Carry out calculations involving all four operations Understand and use brackets Use simple index notation
Unit 18 – Introduction to algebra (2)	<ul style="list-style-type: none"> 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 19 – Algebraic generalisation project (1)	

Summer 2 ~ Percentages and handling data

Unit 20 – Percentages (2)	<ul style="list-style-type: none"> 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 21 – Handling data (2)	<ul style="list-style-type: none"> Understand the difference between types of data Construct and interpret <ul style="list-style-type: none"> 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