

Year 8 Mathematics Mastery Programme of Study September 2019

Autumn 1 ~ Working with number

Unit 1 – Primes and factorising (2 weeks)	<ul style="list-style-type: none"> Find the factors and multiples of a number Find the prime factors of a number Determine HCF and LCM by prime factorisation Find squares, square roots, cubes and cube roots using prime factorisation Use indices to record repeated multiplication 	Y7 U5, U16
Unit 2– Add and subtract fraction (3)	<ul style="list-style-type: none"> Use equivalent fractions Add and subtract fractions with like and unlike denominators Add and subtract fractions mixed numbers and improper fractions Convert between improper fractions and mixed numbers Add and subtract fractions mixed numbers and improper fractions 	Y7 U13, U14, U15

Autumn 2 ~ number and algebra

Unit 3– Positive and negative numbers (2)	<ul style="list-style-type: none"> Represent and order positive and negative integers on a number line (using the symbols $>$, \geq, $<$, and \leq) Show addition and subtraction on a number line Apply the four basic operations on positive and negative integers Calculate with rational and decimal numbers (including negative numbers) 	Y7 U16
Unit 4 – Sequences, expressions and equations (3)	<ul style="list-style-type: none"> Recognise and represent number patterns (including finding an algebraic expression for the n^{th} term) Distinguish between terms and coefficients in algebraic expressions Distinguish between like and unlike terms in algebraic expressions Simplify expressions, collect like terms and expand and factorise linear expressions Substitute numerical values into formulae and expressions Solve linear equations in one unknown Solve simple fractional equations that can be reduced to linear equations Formulate a linear equation in one unknown to solve problems 	Y7 U16, U17 Y8 U3

Spring 1 ~ 2D geometry

Unit 5 – Triangles, quadrilaterals and angles in parallel lines (3)	<ul style="list-style-type: none"> Construct a triangle from given information (sides/angles) Classify special quadrilaterals on the basis of their properties: define a parallelogram, rhombus and trapezium Construct a quadrilaterals from given information (sides/angles) Identify the different types of angles formed by parallel lines and a transversal such as corresponding angles, alternate angles and interior angles Use the various properties of angles to find unknown angles Find unknown angles in geometrical figures involving square, rectangle, parallelogram, rhombus, trapezium and triangle 	Y7 U9, U10, U11
Unit 6 – Length and area: parallelograms and trapezia (2)	<ul style="list-style-type: none"> Convert between cm^2 and m^2 Find the area and perimeter of a figure made up of some of the following shapes: square, rectangle, triangle Find the areas of parallelograms and trapezia Find the areas and perimeters of composite plane figures Solve word problems involving area and perimeter 	Y7 U4, U7, U8, U10, U11

Spring 2 ~ Proportional reasoning

Unit 7 – Percentage change (2)	<ul style="list-style-type: none"> Use percentages greater than 100% Express one quantity as a percentage of another Compare two quantities by percentage Increase or decrease a quantity by a given percentage Understand how to compare quantities using percentages Reverse percentages: find the original quantity given a part of it and its percentage Reverse percentages: find the original quantity when we know its final value after the percentage increase or decrease Solve problems involving percentages and reverse percentages 	Y7 U19
Unit 8 – Ratio and rate (3)	<ul style="list-style-type: none"> Interpret $a : b$ and $a : b : c$, where a, b and c are whole numbers Compare two or more quantities by ratio Understand the relationship between ratios and fractions Write equivalent ratios, and find the missing term in a pair of equivalent ratios Express ratios involving rational numbers in their simplest form Divide a quantity in a given ratio Find the whole/ one part when a whole is divided into parts in a given ratio Solve word problems involving ratio Use the relationship between distance, time and speed Write speed in different units such as km/h, m/min, m/s and cm/s Convert from one unit of speed to another (e.g. km/h to m/s) Solve word problems involving speed, uniform speed and average speed 	Y7 U13, U14, U15

Summer 1 ~ 2D and 3D geometry

Unit 9 – Rounding (1)	<ul style="list-style-type: none"> Round off a number to a required number of decimal places Round off a number to a required number of significant figures Estimate the answer to a given problem Identify rounding and truncation errors 	Y7 U1, U4
Unit 10 – Circumference and area of a circle (2)	<ul style="list-style-type: none"> Use formulae to calculate the area and circumference of a circle Find the area and perimeter of <ul style="list-style-type: none"> semicircle (half circle) quarter circle Solve word problems involving area and perimeter 	
Unit 11 – 3D shapes and nets (1)	<ul style="list-style-type: none"> Recognise nets of 3D shapes Build and name 3D shapes Draw plans and elevations of a given solid Identify a solid from its plans and elevations 	
Unit 12 – Surface area and volume (2)	<ul style="list-style-type: none"> Find the volumes of cubes and cuboids Find the volumes of prisms and cylinders Find the volumes of composite solids Explore the surface area of cubes, cuboids, cylinders other prisms and composite solids Convert between cm^3 and m^3 	Y7 U6, U8 Y8 U6

Summer 2 ~ handling data

Unit 13 – statistics (2)	<ul style="list-style-type: none"> Find the mean, median more and range from raw datasets Use the mean/median/mode to compare data sets Use an average plus the range to compare datasets Find the mode, median and mean from tables and graphical representations (not grouped) Explore methods of data collection including surveys, questionnaires and the use of secondary data Appreciate the difference between discrete and continuous data Classify and tabulate data Conduct statistical investigations using collected data Draw, analyse and interpret graphs including those met in year 7 	Y7 U20
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Meeting

Exceeding

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