CHURCHWOOD PRIMARY ACADEMY

At Churchwood Everyone Can

Mathematics Overview – Year Six

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
W 1	Place value (incl. decimals)	Fractions and negative numbers	Place value and subtraction	Mental and written addition and subtraction	Place value (decimal and negative numbers)	Fractions
W 2	Mental and written addition and subtraction	Shapes (including area, perimeter and volume)	Fractions and decimals	Statistics (incl. line graphs and pie charts)	Mental and written addition and subtraction	Shapes and their properties (incl. angles)
W 3	Algebra	Division and Fractions	Mental and written multiplication and division	Shapes and co-ordinates	Fractions, decimals and percentages	Multiplication and division
W 4	Times and converting measures	Fractions and Percentages	Geometry (shapes and their properties)	Written multiplication and division	Mental and written multiplication and division	Multiplication and Reasoning
W 5	Mental and written multiplication and division	Fractions (incl. multiplying and dividing)	Problem solving strategies and number facts (incl. factors and multiples)	Algebra and sequences	Mental and written multiplication and division	Multiplication and Reasoning and number sequences
W 6	Assess and review week	Assess and review week	Assess and review week	Assess and review week	Assess and review week	Assess and review week

Statistics	• complete, read and interpret information in tables, including timetables • solve comparison, sum and difference problems using information presented in a line graph

Mathematics Objectives Year Six

	Mathematics Objectives I can...
Number and	• use negative numbers in context, and calculate intervals

Place Value	across zero • read, write, order and compare numbers up to 10 000 000 and determine the value of each digit • round any whole number to a required degree of accuracy • identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places (replicated in Fractions) • solve problems which require answers to be rounded to specified degrees of accuracy (replicated in Fractions) • solve number and practical problems that involve all of the above
Addition and subtraction	• perform mental calculations, including with mixed operations and large numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why • solve problems involving addition, subtraction, multiplication and division
Multiplication and division	• perform mental calculations, including with mixed operations and large numbers • associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$) (replicated in Fractions) • multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication • divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • use written division methods in cases where the answer has up to two decimal places (including decimals) (replicated in Fractions)

	• identify common factors, common multiples and prime numbers • use common factors to simplify fractions; use common multiples to express fractions in the same denomination (replicated in Fractions) • calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3 (replicated in Measures) • use their knowledge of the order of operations to carry out calculations involving the four operations • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy • solve problems involving addition, subtraction, multiplication and division • solve problems involving similar shapes where the scale factor is known or can be found (replicated in Ratio and Proportion)
Fractions	• compare and order fractions, including fractions >1 • identify the value of each digit in numbers given to three decimal places • solve problems which require answers to be rounded to specified degrees of accuracy • use common factors to simplify fractions; use common multiples to express fractions in the same denomination • associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$) • recall and use equivalences between simple fractions, decimals and percentages, including in different contexts • add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions • multiply simple pairs of proper fractions, writing the answer in its simplest form (e.g. $^1/_4 \times {}^1/_2 = {}^1/_8$) • multiply one-digit numbers with up to two decimal places by whole numbers • divide proper fractions by whole numbers (e.g. $^1/_3 \div 2 = {}^1/_6$) • multiply one-digit numbers with up to two decimal places by whole numbers

	• multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 where the answers are up to three decimal places • associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $^3/_8$) • use written division methods in cases where the answer has up to two decimal places
Ratio and Proportion	• solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts • solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison • solve problems involving similar shapes where the scale factor is known or can be found • solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
Algebra	• express missing number problems algebraically • find pairs of numbers that satisfy number sentences involving two unknowns • enumerate all possibilities of combinations of two variables • use simple formulae • recognise when it is possible to use formulae for area and volume of shapes (replicated in Measurement) • generate and describe linear number sequence
Measurement	• calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3 • solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate (appears also in Converting) • recognise that shapes with the same areas can have different perimeters and vice versa • calculate the area of parallelograms and triangles • calculate, estimate and compare volume of cubes and

	cuboids using standard units, including cubic centimetres (cm^3) and cubic metres (m^3), and extending to other units [e.g. mm^3 and km^3] • recognise when it is possible to use formulae for area and volume of shapes • use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to three decimal places • convert between miles and kilometres
Geometry – Properties of shapes	• recognise, describe and build simple 3-D shapes, including making nets • illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius • draw 2-D shapes using given dimensions and angles • compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons • recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles
Geometry – Position and direction	• describe positions on the full coordinate grid (all four quadrants) • draw and translate simple shapes on the coordinate plane, and reflect them in the axes
Statistics	• interpret and construct pie charts and line graphs and use these to solve problems • calculate and interpret the mean as an average