John Randall Primary School maths medium term planning Y6

Autumn		***Spring***		***Summer***	
All areas of the maths curriculum will be developed using deepening learning questions based upon solo taxonomy questioning cards.					
Place value and rounding Mental and written addition and subtraction of large numbers	To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To solve number problems and practical problems that involve all of the above. To perform mental calculations, including with mixed operations and large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	Negative numbers, and solving problems involving numbers	To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To use negative numbers in context, and calculate intervals across zero. ● To solve number problems and practical problems that involve all of the above.	Solving problems involving numbers	To read, write, order and compare numbers at least to 10,000,000 and determine the value of each digit. ● To round any whole number to a required degree of accuracy. ● To use negative numbers in context, and calculate intervals across zero. ● To solve number problems and practical problems that involve all of the above
Multiples, factors and prime numbers	To perform mental calculations, including with mixed operations and large numbers. ● To identify common factors, common	Mental and written addition and subtraction of decimals and money	To perform mental calculations, including with mixed operations and large numbers. ● To solve addition and subtraction multi-step	Adding and subtracting large and small numbers	To perform mental calculations, including with mixed operations and large numbers. ● To solve addition and subtraction multi-step

	multiples and prime numbers. ● To solve problems involving addition, subtraction, multiplication and division. .		problems in contexts, deciding which operations and methods to use and why. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.		problems in contexts, deciding which operations to use and why. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Written methods for multiplication and division: HTU × ÷ TU and HTU × ÷ U	To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. ● To solve problems involving addition, subtraction,	Mental and written multiplication and division	To perform mental calculations, including with mixed operation and large numbers. ● To identify common factors, common multiples and prime numbers (Children could practise using mental methods that involve using factors, for example.) ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To use estimation to check answers to calculations and determine, in the	Long multiplication and division	To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written methods of long multiplication. ● To divide numbers up to 4 digits by two digit whole numbers using the efficient written method of long division and interpret remainders as whole number remainders, fractions or by rounding, as appropriate for the context. ● To use estimation to check answers to calculations and

	multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.		context of a problem, levels of accuracy.		determine, in the context of a problem, levels of accuracy.
Geometry: circles and angles	To illustrate and name parts of circles, including radius, diameter and circumference. ● To recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.	Calculating with fractions	To add and subtract fractions with different denominators, using the concept of equivalent fractions. ● To associate a fraction with division to calculate decimal fraction equivalents (0.375) for a simple fraction (3/8). ● To multiply simple pairs of proper fractions, writing the answer in its simplest form (1/4 ÷ 1/2 = 1/8). ● To divide proper fractions by whole numbers (1/3 ÷ 2 = 1/6).	Calculating with fractions: multiplication & division	Multiply simple pairs of proper fractions, writing the answer in its simplest form Associate a fraction with division and calculate decimal fraction equivalents
Measurement	To solve problems involving the calculation and conversion of units of	Geometry: Reflections and translations on coordinate axes	● To describe positions on the full co-ordinate grid (all four quadrants).	Problems involving percentages, fractions and decimals	● To solve problems involving the calculation of percentages of whole

	measure, using decimal notation to three decimal places where appropriate. ● To 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 three decimal places. ● To convert between miles and kilometres.		● To draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes.		numbers or measures and the use of percentages for comparison. ● To recall and use equivalences between simple fractions, decimals and percentages including in different contexts.
Multiplication and division: Written methods	● To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using efficient written methods of long division and interpret	Measurement: Perimeter, area and volume	To recognise that shapes with the same area can have different perimeters and vice versa. ● To calculate the area of parallelograms and triangles. ● To recognise when it is necessary to use the formulae for area and volume of shapes.	Measurement: Problems involving measures	To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate. ● To use, read, write and convert between standard units, converting measurements of

	remainders as whole numbers, remainders, fractions or by rounding as appropriate in the context.		● To calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm3) and cubic metres (m3) and extending to other units such as mm3 and km3.		length, mass, volume and time from a smaller unit of measure to a large unit and vice versa, using decimal notation to three decimal places
Comparing, ordering and simplifying fractions	To compare and order fractions, including fractions >1. ● To use common factors to simplify fractions; use common multiples to express fractions in the same denomination.	Calculating with large numbers	To multiply multi-digit numbers up to 4 digits by a two-digit whole number using the efficient written method of long multiplication. ● To divide numbers up to 4 digits by a two-digit whole number using the efficient written method of long division, and interpret remainders as whole number remainders, fractions, or by	Geometry: nets	Recognise, describe and build simple 3-D shapes, including making nets

			rounding, as appropriate for the context. ● To perform mental calculations, including with mixed operations and large numbers. ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To solve problems involving addition, subtraction, multiplication and division.		
Multiplying decimals by 10, 100 and 1000	To identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100, 1000 where the answers are up to three decimal places. ● To solve problems which require answers to be rounded to specified degrees of accuracy.	Multiplying and dividing decimals	● To multiply one-digit numbers with up to two decimal places by whole numbers. ● To use written division methods in cases where the answer has up to two decimal places. ● To solve problems which require answers to be rounded to specified degrees of accuracy.	Algebra	Use simple formulae generate and describe linear number sequences express missing number problems algebraically find pairs of numbers that satisfy an equation with two unknowns enumerate possibilities of combinations of two variables

Calculation: order of operations	To perform mental calculations, including with mixed operations and large numbers. ● To use their knowledge of the order of operations to carry out calculations involving the four operations. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To solve problems involving addition, subtraction, multiplication and division. ● To use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.	Percentages, decimals and fractions Ratio & Proportion	To solve problems involving the calculation of percentages of whole numbers or measures and the use of percentages for comparison. ● To recall and use equivalences between simple fractions, decimals and percentages, including different contexts. To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts To solve problems involving similar shapes where the scale factor is known or can be found To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.	Ratio & Proportion	To solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts To solve problems involving similar shapes where the scale factor is known or can be found To solve problems involving unequal sharing and grouping using knowledge of fractions and multiples.

Algebra: simple formulae	● To express missing number problems algebraically. ● To use simple formulae expressed in words. ● To find pairs of numbers that satisfy number sentences involving two unknowns.	Algebra: number puzzles	● To express missing number problems algebraically. ● To use simple formulae expressed in words. ● To generate and describe linear number sequences. ● To find pairs of numbers that satisfy number sentences involving two unknowns. ● To enumerate all possibilities of combinations of two variables.	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.
Geometry: 2D and 3D shapes	● To draw 2D shapes using given dimensions and angles. ● To compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles,	Measurement: Area and volume	● To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places, where appropriate. ● To use read, write and convert between	Measurement: Solving problems in the context of measures	● To solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places, where appropriate. ● To use read, write and convert between

	quadrilaterals and regular polygons. ● To recognise, describe and build simple 3D shapes, including making nets.		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 three decimal places. ● To calculate the area of parallelograms and triangles. ● To recognise when it is necessary to use the formulae for area and volume of shapes.		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 three decimal places.
Statistics: Pie charts	To interpret and construct pie charts and line graphs and use these to solve problems.	Statistics: Line graphs	To interpret and construct line graphs and use these to solve problems.	Statistics: Mean average	To interpret and construct pie charts and line graphs and use these to solve problems. ● To calculate and interpret the mean as an average.