John Randall Primary School maths medium term planning Y5

Autumn		Spring		Summer	
All areas of the maths curriculum will be developed using deepening learning questions based upon solo taxonomy questioning cards.					
Place value to 1,000,000	● To read, write, order and compare numbers at least to 1,000,000 and determine the value of each digit. ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000.	Negative numbers, and solving problems involving numbers	● To read, write, order and compare numbers at least to 1,000,000 and determine the value of each digit. ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ● To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. ● To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. ● To solve number problems and practical problems that involve all of the above.	Number systems: roman numerals	● To read numerals to 1000 (M) and recognise years written in Roman numerals. ● To count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. ● To interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero. ● To round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000. ● To solve number problems and practical problems that involve all of the above.

Mental addition and subtraction	To add and subtract whole numbers with more than 4 digits ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why.	Addition and subtraction of large numbers and money	To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. ● To solve problems involving numbers up to three decimal places.	Addition and subtraction of large numbers	To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction). ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. ● To solve problems involving numbers up to three decimal places.
Factors of numbers and prime numbers	● To identify multiples and factors, including finding all factor pairs of a number, and	Long multiplication, square numbers and cube numbers	To multiply and divide numbers mentally drawing upon known facts.	Long multiplication and division with remainders	To multiply and divide numbers mentally drawing upon known facts.

	common factors of two numbers. ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving multiplication and division where larger numbers are used by decomposing them into factors. ● To know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. ● To establish whether a number up to 100 is prime and recall prime numbers up to 19.		● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3). ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes.		● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient written method, including long multiplication for two-digit numbers. ● To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context. ● To solve problems involving addition, subtraction, multiplication and division and a

					combination of these, including understanding the meaning of the equals sign.
Using multiplication and division facts	● To multiply and divide numbers mentally drawing upon known facts. ● To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.	Adding and subtracting fractions	To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: 2/5 + 4/5 = 6/5 = 11/5. ● To add and subtract fractions with the same denominator and multiples of the same number.	Fractions: calculation	To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: 2/5 + 4/5 = 6/5 = 11/5. ● To add and subtract fractions with the same denominator and multiples of the same number.
Geometry: Angles	To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles ● To draw given angles, and measure them in degrees (º). To identify:	Geometry: Reflections and translations	● To identify, describe and represent the position of a shape following a reflection or translation using the appropriate language, and know that the shape has not changed.	Geometry: Diagonals and problems involving angles	● To know angles are measured in degrees; estimate and compare acute, obtuse and reflex angles ● To draw given angles, and measure them in degrees (º).

	● angles at a point and one whole turn (total 360º) ● angles at a point on a straight line and 1/2 a turn (total 180º) ● other multiples of 90º.				● To identify: angles at a point and one whole turn (total 360º) ● angles at a point on a straight line and 1/2 a turn (total 180º) ● other multiples of 90º . ● To use the properties of a rectangle to deduce related facts and find missing lengths and angles. ● To distinguish between regular and irregular polygons based on reasoning about equal sides and angles.
Measurement: length, perimeter and area	To convert between different units of measure (for example, kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre). ● To understand and use equivalences between metric units and common imperial	Measurement: mass	To convert between different units of measure (kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre). ● To understand and use basic equivalences between metric units and common imperial	Measurement: Volume, time and money	● To estimate volume (e.g. using 1 cm3 blocks to build cubes and cuboids) and capacity (e.g. using water). ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling

	units such as inches, pounds and pints. ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling. ● To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes.		units such as inches, pounds and pints. ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling.		● To solve problems involving converting between units of time.
Multiplication and division: Written methods	To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient	Addition and subtraction: mental and written methods for large numbers	To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction).	All four operations: money	To use all four operations with whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction).

	written method, including long multiplication for two-digit numbers. To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context. ● To multiply and divide numbers mentally drawing upon known facts. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.		● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. ● To use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy.		● To calculate numbers mentally with increasingly large numbers. ● To solve multi-step problems in contexts (money), deciding which operations and methods to use and why.
Fractions and decimals: tenths and hundredths	● To compare and order fractions whose denominators are all multiples of the same number. ● To identify, name and write equivalent fractions of a given fraction, represented	Multiplication and division: written methods	To multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. ● To multiply numbers up to 4 digits by a one- or two-digit number using an efficient	Decimals and fractions	● To read, write, order and compare numbers with up to three decimal places. ● To read and write decimal numbers as fractions (for example, 0.71 = 71/100).

	visually, including tenths and hundredths. ● To read and write decimal numbers as fractions (for example, 0.71 = 71/100).		written method, including long multiplication for two-digit numbers. ● To divide numbers up to 4 digits by a one-digit number using the efficient written method of short division and interpret remainders appropriately for the context. ● To solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign.		● To recognise and use thousandths and relate them to tenths, hundredths and decimals equivalents. ● To round decimals with two decimal places to the nearest whole numbers and to one decimal place.
Decimals: tenths, hundredths, thousandths	To read, write, order and compare numbers with up to three decimal places. ● To round decimals with two decimal places to the nearest whole numbers and to one decimal place.	Calculating with fractions	● To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: 2/5 + 4/5 = 6/5 = 11/5.	Problems involving percentages	To recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator hundred,

	● To recognise and use thousandths and relate them to tenths, hundredths and decimals equivalents. ● To solve problems involving number up to three decimal places.		● To add and subtract fractions with the same denominator and multiples of the same number. ● To multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.		and as a decimal fraction. ● To solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 4/5 and those with a denominator of a multiple of 10 or 25.
Geometry	● To distinguish between regular and irregular polygons based on reasoning about equal sides and angles. ● To use the properties of rectangles to deduce related facts and find missing lengths and angles. ● To identify 3D shapes including cubes and cuboids from 2D representations.	Percentages	● To recognise the per cent symbol (%) and understand that per cent relates to "number of parts per hundred", and write percentages as a fraction with denominator hundred, and as a decimal fraction.	Perimeter, area and scale drawing	To measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres. ● To calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes. ● To solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates.

Statistics: tables and bar charts	To complete, read and interpret information in tables, including timetables.	Measurement: capacity	To convert between different units of measure (kilometre and metre; metre and centimetre; centimetre and millimetre; kilogram and gram; litre and millilitre). ● To understand and use basic equivalences between metric units and common imperial units such as inches, pounds and pints. ● To estimate volume and capacity ● To use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling	Statistics: Timetables	Complete, read and interpret information in tables, including timetables.
		Statistics: Line graphs/ comparative graphs	To solve comparison, sum and difference problems using information presented in a line graph.		