Mathematics Teaching Sequence – Year 5

Year 5		
Autumn Term (7 weeks + 7 weeks = 14 weeks)	**Small steps**	**Key vocab**
Number and Place value (3 weeks) **5N1** Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 **5N2** Read, write, order and compare numbers to at least 1 000 000 **5N3a** Determine the place value of each digit in numbers up to 1 000 000 **5N4** Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000, and 100 000 **5N6** Solve number and practical problems that involve 5N1-5N4	Numbers to 10,000 Numbers to 100,000 Numbers to 1,000,000 Read and write numbers to 1,000,000 Powers of 10 10/100/1,000/10,000/100,000 more or less Partition numbers to 1,000,000 Number line to 1,000,000 Compare and order numbers to 100,000 Compare and order numbers to 1,000,000 Round to the nearest 10,100 or 1,000 Round within 100,000 Round within 1,000,000	Place value Millions Hundreds of thousands Tens of thousands Thousands Hundreds Tens Ones Place holder Roman numerals Greater than Less than Equals to Ascending Descending
Addition and subtraction (3 weeks) **5C1** Add and subtract numbers mentally with increasingly large numbers **5C2** Add and subtract numbers with more than 4 digits, using formal written methods of columnar addition and subtraction **5C3** Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy **5C4** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. **5C8b** Solve problems involving addition and subtraction operations, a combination of these and including understanding the meaning of the equals sign	Mental Strategies (within this small step, break it down into: double facts of single digits, near doubles, adding 9 by adding 10 and subtracting 1, adding 99 by adding 100 and subtract 1, and also general mental calculations that don't cross any boundaries e.g. 65,000 – 3000). Add whole numbers with more than four digits Subtract whole numbers with more than four digits Round to check answers Inverse operations (addition and subtraction) Multi-step addition and subtraction problems Compare calculations Find missing numbers	Addition vocab: sum, totals, altogether, combine, plus, more Subtraction: finding the difference, minus, less than, left, take away Crossing the boundary Exchange Place value columns Operations: addition and subtraction Most efficient method Mental Formal (written)
Multiplication and Division (3 weeks) **5C5a** Identify multiples and factors, including finding all factor pairs of a number and common factors of two numbers **5C5b** Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers **5C5c** Establish whether a number up to 100 is prime and recall prime numbers up to 19 **5C5d** Recognise and use square numbers and cube numbers and the notation for squared (2) and cubed (3) **5C6b** Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 **NTS assessment week**	Multiples Common multiples Factors (see link for teaching factors pairs) Teaching factor pairs.docx Common factors Prime numbers Square numbers Cube numbers Multiply by 10,100 and 1,000 Divide by 10, 100 and 1,000 Multiples of 10, 100 and 1,000	Multiples Factors Prime Composite Square number Notation (2) Expanded form e.g. 4 x 4 Cube number Notation (3) Expanded form 4 x 4 x 4 Multiplying by itself Place value chart Digits moving left or right

Fractions (4 weeks) **5F2a** Recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements >1 as a mixed number eg: 2/5 +4/5 = 1 1/5 **5F2b** Identify name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths **5F3** Compare and order fractions whose denominators are all multiples of the same number **5F4** Add and subtract fractions with the same denominator and denominators that are multiples of the same number **5F5** Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Find fractions equivalent to a unit fraction Find fractions equivalent to a non-unit fraction Recognise equivalent fractions Convert improper fractions to mixed numbers (see link for teaching this step) NUMICON improper fractions and mixed numbers.docx Convert mixed numbers to improper fractions Compare fractions less than 1 (see link for this step) Yr 5 and 6 COMPARE FRACTIONS.docx Order fractions less than 1 (see link for this step) Yr5 and 6 ORDER FRACTIONS.docx Compare and order fractions greater than 1 Add and subtract fractions with the same denominator Add fractions within 1 (see link for this step) Yr 5 and 6 ADD or SUBTRACT FRACTIONS.docx Add fractions with total greater than 1 Add to a mixed number Add two mixed numbers Subtract fractions Subtract from a mixed number Subtract from a mixed number - breaking the whole Subtract two mixed numbers	Parts Whole Denominator Numerator Unit fraction Non-unit fraction Simplifying Equivalent Associate fraction line with division Mixed numbers Proper fractions Improper fractions Convert Greater than 1 Multiples Common denominator Lowest common multiple Highest common multiple
Spring Term (6 weeks + 7 weeks = 13 weeks)	**Small steps**	**Key vocab**
Multiplication and Division (2.5 weeks) **5C7a** Multiply numbers up to 4 digits by a one or two-digit number using a formal written method, including long multiplication for two digit numbers **5C7b** Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context **5C8a** Solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes **5C8b** Solve problems involving all 4 operations, combination of these, including understanding the meaning of the equals sign **5C8c** Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates	**Short multiplication:** Multiply up to a 4-digit number by a 1-digit number (short multiplication, the pupils have done this method in Yr4 and in Yr5 arithmetic sessions). **Long multiplication:** Multiply a 2-digit number by a 2-digit number Multiply a 3-digit number by a 2-digit number Multiply a 4-digit number by a 2 -digit number Solve problems with multiplication **Short division:** Divide a 4-digit number by a 1-digit number Divide with remainders Efficient division Solve problems with multiplication and division (aim for 2-3 lessons of solving word problems. Two step word problems where step one is applying column addition or subtraction from Autumn term, and then step two is applying multiplication and division methods from this unit).	Place value vocab Known facts (times tables knowledge) Short multiplication Moving digits Long multiplication (formal written method) Language associated with division: share, split equally, equal groups, dividend, divisor, quotient, Mental method Short division Known facts Most efficient method
Number – Roman Numerals (0.5 weeks) **5N5** Read Roman numerals to 1000 (M) and recognise years written in Roman numerals.	Roman numerals to 1000	Digits I V X L C D M
Fractions (2 weeks) 5F5 Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams	Multiply a unit fraction by an integer Multiply a non-unit fraction by an integer Multiply a mixed number by an integer Calculate a fraction of a quantity Fraction of an amount Find the whole Use fractions as operators	Numerator Denominator Unit fraction Non-unit fraction Whole Part Groups of

		Lots of Multiply Denominator stays the same
Decimals and percentages (3 weeks) **5F6a** Read and write decimal numbers as fractions [eg: 0.71 = 71/100] **5F6b** Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents **5F7** Round decimals with two decimal places to the nearest whole number and to one decimal place **5F8** Read, write, order and compare numbers with up to three decimal places **5F10** Solve problems involving numbers up to three decimal places **5F11** Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal **5F12** Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5 and 4/5 and those fractions with a denominator of a multiple of 10 or 25	Decimals up to 2 decimals places Equivalent fractions and decimals (tenths) Equivalent fractions and decimals (hundredths) Equivalent fractions and decimals Thousandths as fractions Thousandths as decimals Thousandths on a place value chart Order and compare decimals (same number of decimal places) Order and compare any decimals with up to 3 decimals places Round to the nearest whole number Round to 1 decimal place Understand percentages Percentages as fractions Percentages as decimals Equivalent fractions, decimals and percentages	Decimal point Decimal places (dp) Place value Tenths Hundredths Thousandths Mixed number Improper fractions Percent 100 Whole Divide Part Out of 100
Measurement – Perimeter (1 week) **5M7a** Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres **NTS assessment week**	Perimeter of rectangles Perimeter of rectilinear shapes Perimeter of polygons	Perimeter 2-d shape Equal sides Sum of sides/lengths units: centimetres, metres. Rectilinear shapes
Number – Negative Numbers (1 week) **5N5** Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero	Understand negative numbers Count through zero in 1s Count through zero in multiples Compare and order negative numbers Find the difference	Negative Zero Less than zero Number line Greater Smaller Difference
Measurement – Area (1 week) **5M7b** Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm2) and square metres (m2) and estimate the area of irregular shapes	Area of rectangles Area of compound shapes Estimate area	Area Area of a rectangle = Length x Width Square centimetres (cm^2) Square metres (m^2)
Statistics (1.5weeks) (This might run into the first week of Summer term) **5S1** Complete, read and interpret information in tables, including timetables	Read and interpret line graphs Read and interpret tables Two-way tables Read and interpret timetables	Statistics Line graph Title Equal intervals

5S2 Solve comparison, sum and difference problems using information presented in a line graph		X – Axis Y – Axis Compare/comparison Greater/less than Sum Difference
Summer Term (4 weeks + 7 weeks = 11 weeks)	**Small steps**	**Key vocab**
Geometry – Shape (2 weeks) 5G2a Use the properties of rectangles to deduce related facts and find missing lengths and angles 5G2b Distinguish between regular and irregular polygons based on reasoning about equal sides and angles 5G3b Identify 3–D shapes including cubes and other cuboids, from 2–D representations 5G4a Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles 5G4b Identify: • angles at a point and one whole turn (total 360°) • angles at a point on a straight line and a 1/2 turn (total 180°) • other multiples of 90° 5G4c Draw given angles and measure them in degrees	Understand and use degrees Classify angles Estimate angles Measure angles up to 180° Draw lines and angles accurately Calculate angles around a point Calculate angles on a straight line Lengths and angles in shapes Regular and irregular polygons 3-D shapes	Degrees Quarter turn, half turn, three-quarter turn, full turn Acute Obtuse Reflex Right angle Straight line Regular Irregular Polygons 3-D shapes
Number – Decimals (3 weeks) 5F6a Read and write decimal numbers as fractions [eg: 0.71 = 71/100] 5F6b Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents 5F7 Round decimals with two decimal places to the nearest whole number and to one decimal place 5F8 Read, write, order and compare numbers with up to three decimal places 5F10 Solve problems involving numbers up to three decimal places 5F11 Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal 5F12 Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5 and 4/5 and those fractions with a denominator of a multiple of 10 or 25	Use known facts to add and subtract decimals within 1 Complements to 1 Add and subtract decimals across 1 Add decimals with the same number of decimal places Subtract decimals with the same number of decimal places Add decimals with different numbers of decimal places Subtract decimals with different numbers of decimal places Efficient strategies for adding and subtracting decimals Decimal sequences Multiply by 10, 100, 1000 Divide by 10, 100, 1000	Number bonds Add Subtract Decimal point Tenths Hundredths Thousandths Multiply Divide
Geometry – Position and direction (1 week) 5P2 Identify, describe and represent the position of a shape following a refection or translation,	Read and plot coordinates Problem solving with coordinates	Positioning Shape

using the appropriate language, and know that the shape has not changed	Translation Translation with coordinates Lines of symmetry Reflection in horizontal and vertical lines	Reflection Equal distance Reflection (mirror) line Co-ordinates Translation Position Direction
Measure – converting units (2 weeks) **5M4c** Solve problems involving converting between units of time **5M5** Convert between different units of metric measure [eg: kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre] **5M6** Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints **NTS assessment week**	Kg and km Mm and ml Convert units of length Convert between metric and imperial units Converting units of time Calculate with timetables	Millimetres, Centimetres Metres, Kilometres Grams, Kilograms Litres, Millilitres Imperial units Inch, Pounds, Gallon, Pints Hours, Minutes, Seconds Days, Weeks, Months, Years
Measure - volume (1 week) **5M8** Estimate volume [eg: using 1cm3 blocks to build cuboids (including cubes)] and capacity [eg: using water]	Cubic centimetres Compare volume Estimate volume	Volume 3D shapes Unit cubes Compare Non-standard Length / height Width Depth Volume = L x W x H Length x Width x Height