Newington Green and Rotherfield Maths MTP - Year 5

Blue font in Spring/Summer indicates previously untaught objective

Green font indicates cross-curricular links

Autumn 1			
The Olympics			
Number and Place Value **Weeks 1 -2**	**Addition and Subtraction** **Weeks 3 -4**	**Measurement** **Weeks 5-6**	**Geometry and Position and Direction** **Week 7**
• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit e.g. order a set of multi-digit numbers from smallest to largest: 37 700, 737 570, 737 507, 37 570 • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 e.g. 197 000, 198 000, 199 000, 200 000, 201 000… • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers through zero e.g. count back in threes: 8, 5, 2, -1, -4, -7… • round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 e.g. 265 946 to the nearest 1000 (266 000) • solve number problems and practical problems that involve all of the above e.g. What number is halfway between 560 500 and 560 600? • read Roman numerals to 1000 (M) and recognise years written in	• add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction) • add and subtract numbers mentally with increasingly large numbers e.g. 15 400 – 2000 = 13 400 • use rounding 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 e.g. I have read 124 of the 526 pages of my book. How many more pages must I read to reach the middle?	• convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) e.g. 15.7cm = 157mm • understand and use equivalences between metric units and common imperial units such as inches, pounds and pints e.g. Given that an inch is approximately 2.5cm, calculate the metric equivalent of a foot (12 inches) • estimate volume (e.g. using 1 cm3 blocks to build cubes and cuboids) and capacity (e.g. using water)	• distinguish between regular and irregular polygons based on reasoning about equal sides and angles e.g. sort triangles and quadrilaterals into regular and irregular sets, realising that only the equilateral triangles and the squares are regular • identify 3-D shapes, including cubes and other cuboids, from 2-D representations e.g. using isometric paper

Roman numerals e.g. MCMXIV (1914)			

Autumn 2			
Earth and Space			
Multiplication and Division **Weeks 7-8**	**Fractions** **Weeks 9 -10**	**Measurement** **Weeks 11**	**Statistics** **Weeks 12**
• identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers e.g. 3 is a factor of 12 and 9 • solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors e.g. 828÷36 = (828÷4)÷9 = 207÷9 = 23 • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit number• multiply and divide numbers mentally drawing upon known facts e.g. 60x9 or 120÷4 • 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 e.g. 98 ÷ 4 = 24 r 2 = 24½ = 24.5 ≈ 25 • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • solve problems involving addition, subtraction, multiplication and	• compare and order fractions whose denominators are all multiples of the same number e.g. put these fractions in order from the smallest: 5/12, 5/6, 11/12, 2/3 • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths e.g. 37/100 metre = 0.37m • recognise mixed numbers and improper fractions and convert from one form to the other e.g. 5 2/3 = 17/3 and write mathematical statements > 1 as a mixed number e.g. 2/5 + 4/5 = 6/5 = 11/5 • add and subtract fractions with the same denominator and multiples of the same number e.g. 2/3 + 1/6 = 5/6 • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams e.g. use egg boxes to represent 25/6 × 3 = 615/6= 83/6= 81/2	• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres e.g. find the perimeter of an L shape where one or two side lengths are not given • • calculate and compare the area of squares and rectangles including using time taken by particular events or tasks.	• solve comparison, sum and difference problems using information presented in a line graph e.g. on a distance-time graph, how long did it take to travel a particular distance? • • complete, read and interpret information in tables, including timetables

division and a combination of these, including understanding the meaning of the equals sign e.g. 40×8=500 -_____ • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates *e.g. a toymaker can make 8 toys in 2 hours. How many toys can he make in 5 hours?*			

Spring 1		
Vikings		
Addition and Subtraction **Week 1-2**	**Measurement** **Weeks 3-4**	**Multiplication and Division** **Week 5-6**
• add and subtract whole numbers with more than 4 digits, including using formal written methods (column addition and subtraction) • add and subtract numbers mentally with increasingly large numbers e.g. 14 265 + 3 100 = 17 365 • use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy e.g. 1438-329= 1400-600=1000 • solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why e.g. I bought some stickers on Monday; on Tuesday I bought 20 more than I bought on Monday; now I have 70; how many stickers did I buy on Monday?	• convert between different units of metric measure (e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) e.g. 1254g = 1.254kg • understand and use equivalences between metric units and common imperial units such as inches, pounds and pints e.g. Given that an inch is approximately 2.5cm, calculate the metric equivalent of a foot (12 inches) • solve problems involving converting between units of time e.g. write these lengths of time in order, starting with the smallest: 250sec, 90min, ½ hour, 4min	• identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers e.g. 2 and 12 are common factors of 36 and 48 solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors e.g. 828÷36 = (828÷4)÷9 = 207÷9 = 23 • multiply numbers up to 4 digits by a one- or two-digit number using a formal written method including long multiplication for two-digit number • multiply and divide numbers mentally drawing upon known facts e.g. 840÷12 • 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 e.g. an egg box holds 12 eggs. How many egg boxes are needed for 100 eggs?

		• multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 e.g. 456÷100=4.56 • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign e.g. There are 6 shelves of books. 3 shelves hold 35 books each, one shelf holds 45 books and the top two shelves have the same number of books on each. There are 200 books altogether. How many books are on the very top shelf? • solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates e.g. 1kg of Chocolate costs £2.50. How much does 2.5kg cost? • recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3) e.g. 33 = 3x3x3=27

Spring 2		
Egyptians		
Fractions **Weeks 7-8**	**Geometry and Position & Direction** **9-10**	**Number and Place Value** **Weeks 9 -10**
• read, write, order and compare numbers with up to three decimal places e.g. put these decimals in order starting from the smallest: 0.457, 0.42, 0.46, 0.426 • 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 e.g. 43% = 43/100 = 0.43 • solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25 e.g. 12/20 = 60/100 = 0.6 = 60%	• know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles • draw given angles, and measure them in degrees (o) • identify: angles at a point and one whole turn (total 360˚) angles at a point on a straight line and ½ a turn (total 180˚) other multiples of 90˚ • use the properties of rectangles to deduce related facts and find missing lengths and angles e.g. all angles are right angles, diagonals are congruent (same length) and	• read, write, order and compare numbers to at least 1 000 000 and determine the value of each digit e.g. what is the smallest integer you can make using all of these digits: 8, 1, 0, 5, 6? What must be added to 37 500 to change it to 67 500? • count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 • interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero e.g. the temperature was 7oc during the day but dropped by 9oc at night. What was the temperature at night?

• compare and order fractions whose denominators are all multiples of the same number e.g. put these fractions in order from the smallest: 5/12, 5/6, 11/12, 2/3 • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths, making links to decimals and measures e.g. 37/100 metre = 0.37m • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number e.g. 2/5 + 4/5 = 6/5 = 1 and 1/5 • add and subtract fractions with the same denominator and denominators that are multiples of the same number e.g. 2/5 + 7/10 = 11/10 = 11/10 • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams e.g. 25/6 × 3 = 615/6= 83/6= 81/2 • read and write decimal numbers as fractions e.g. 0.69 = 69/100 recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • round decimal places to the nearest whole number and to one decimal place	bisect each other (divide into two equal parts), one diagonal separates the • rectangle into two congruent triangles… • distinguish between regular and irregular polygons based on reasoning about equal sides and angles e.g. sort triangles and quadrilaterals into regular and irregular sets, realising that only the equilateral triangles and the squares are regular • 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	• round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 • solve number problems and practical problems that involve all of the above e.g. What is the largest 4 – digit number whose digits sum to 20 ? (9920) read Roman numerals to 1000 (M) and recognise years written in Roman numerals.

Summer 1				
Jungles and Rainforests				
Addition and Subtraction **Week 1**	**Fractions and Decimals** **Weeks 2-3**	**Geometry and Position and Direction** **Week 4**	**Statistics** **Week 5**	**Number and Place Value** **Week 6**
• add and subtract whole numbers with more than 4 digits, including using formal written methods (column addition and subtraction) • add and subtract numbers mentally with increasingly large numbers e.g. 12 462 – 2 300 = 10 162 • use rounding 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 e.g. Write a number story for this number sentence: 3709=4562+234-1087	• read and write decimal numbers as fractions e.g. 0.8 = 4/5 • • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents e.g. 782/1000 = 7/10 + 8/100 + 2/1000 • • round decimals with two decimal places to the nearest whole number and to one decimal place e.g. 27.59=27.6 (1d.p.) • • read, write, order and compare numbers with up to three decimal places • • solve problems involving numbers up to three decimal places e.g. put these decimals in order starting from the smallest: 0.471, 0.46, 0.4, 0.465, 0.5 • • 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 e.g. 43% = 43/100 = 0.43	• identify 3-D shapes, including cubes and other cuboids, from 2-D representations • 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	• solve comparison, sum and difference problems using information presented in a line graph e.g. on a distance-time graph, how long did it take to travel a particular distance? • complete, read and interpret information in tables, including timetables	• count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number • recognise the place value of each digit in a three-digit number (hundreds, tens, ones) • compare and order numbers up to 1000 • identify, represent and estimate numbers using different representations • read and write numbers up to 1000 in numerals and in words e.g. three hundred and forty-six • solve number problems and practical problems involving these ideas

	• solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those with a denominator of a multiple of 10 or 25 e.g. 12/20 = 60/100 = 0.6 = 60%; John ate 4/5 of a 20cm jelly snake. Jane ate 0.7 of her 20cm jelly snake. How much more has John eaten?			
Summer 2				
Build it High				
Addition and Subtraction **Week 7**	**Measurement** **Week 8**	**Multiplication and Division** **Week 9**	**Fractions** **Week 10**	**Weeks 11-12** **Working towards expectations for Y4** ***Use the progression map to inform your planning – what do they need to know to ensure they are ready to move to Y4**
• add and subtract numbers mentally, including: o a three-digit number and ones e.g. 507 - 8 o a three-digit number and tens e.g. 476 + 50 o a three-digit number and hundreds e.g. 858 – 300 • add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	• measure, compare, add and subtract volume/capacity (l/ml) e.g. Read 300ml on a scale labelled every 200ml. Order a set of containers by capacity, using a measuring jug and water to check. Know the approximate capacity of a cup, a jug, a bucket… • estimate and read time with increasing	• recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables • write and calculate mathematical statements for multiplication and division using the multiplication tables that • they know, including for two-digit numbers times one-digit	• count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 • recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators	**Number and place value** Pupils should be taught to: • count in multiples of 6, 7, 9, 25 and 1000 • find 1000 more or less than a given number • count backwards through zero to include negative numbers • recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones)

• estimate the answer to a calculation and use inverse operations to check answers e.g. 702 – 249 is approximately 700 – 250 = 450; check 453 + 249 = 702 • solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	accuracy to the nearest minute; record and compare time in terms of seconds, minutes, hours and o'clock; use vocabulary such as a.m./p.m., morning, afternoon, noon and midnight • know the number of seconds in a minute and the number of days in each month, year and leap year • compare durations of events, for example to calculate the time taken by particular events or tasks	numbers, using mental and progressing to formal written methods • solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.	• recognise and show, using diagrams, equivalent fractions with small denominators • add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7] • compare and order unit fractions, and fractions with the same denominators	• order and compare numbers beyond 1000 • identify, represent and estimate numbers using different representations • round any number to the nearest 10, 100 or 1000 **Addition and subtraction** Pupils should be taught to: • add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • estimate and use inverse operations to check answers to a calculation • solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why **Multiplication and division** Pupils should be taught to: • recall multiplication and division facts for multiplication tables up to 12 × 12 • use place value, known and derived facts to multiply and divide

				mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculation