Newington Green and Rotherfield Maths MTP – Year 5

Blue font in Spring/Summer indicates previously untaught objective

Green font indicates cross-curricular links

	Autumn **The Olympics** **Space**	**Spring** **Vikings** **Egyptians**	**Summer** **Jungles and Rainforests** **Build It High**
Number and Place Value	**Weeks 1-3 and Weeks 13-14**	**Weeks 11-12**	
	• 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)*	• 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 7°c during the day but dropped by 9°c at night. What was the temperature at night?* • 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 number is halfway between 560 500 and 560 600? • read Roman numerals to 1000 (M) and recognise years written in Roman numerals *e.g. MCMXIV (1914)*	• 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.	
Addition and Subtraction	**Weeks 1-3 and Weeks 13-14**	**Week 1**	**Week 1**
	• 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?	• 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*	• 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*

		many stickers did I buy on Monday?	
Measurement	**Weeks 4–5**	**Weeks 2–3**	**Week 6**
	SCIENCE LINK: To be able to identify the effects of air resistance on different objects such as parachutes and sycamore seeds. To be able to identify the effects of water resistance on boats of different sizes. To be able to identify the effects of friction and how it slows or stops moving objects. • 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 cm^3 blocks to build cubes and*	• 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*	• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of squares and rectangles including using standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes *e.g. investigate possible rectangles with the same area as a particular square; calculate the area of a 5cm × 3cm garden on a scale drawing with a scale 1cm:2m ($60m^2$)* PSHE LINK: LO: To know that money can be borrowed. LO: To understand the risks associated with borrowing money. • use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling

	cuboids) and capacity (e.g. using water)		
	Weeks 9-12		**Weeks 7-9 (according to need)**
	• 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		DESIGN & TECHNOLOGY LINK: To design and annotate a product and recipe. • convert between different units of metric measure (e.g. kilometre and metre;

	standard units, square centimetres (cm^2) and square metres (m^2) and estimate the area of irregular shapes • use all four operations to solve problems involving measure (e.g. length, mass, volume, money) using decimal notation including scaling		centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) • understand and use equivalences between metric units and common imperial units such as inches, pounds and pints

Geometry and Position & Direction	**Weeks 4-5**
	• 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*
		Weeks 9-10
		• know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
		• draw given angles, and measure them in degrees (°)
		• 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 bisect each other (divide into two equal parts), one diagonal separates the
			Week 4
			GEOGRAPHY LINK: To be able to design an ideal city.
			• identify 3-D shapes, including cubes and other cuboids, from 2-D representations
			Week 5
			• 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

		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	
Multiplication and Division	**Weeks 6-8**	**Weeks 4–6**	**Weeks 7-9 (according to need)**
	• 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,	• 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,	• identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. • solve problems involving multiplication and division where larger numbers are used by decomposing them into their factors • know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers

	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 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?*	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,	• establish whether a number up to 100 is prime and recall prime numbers up to 19 • 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 • multiply and divide numbers mentally drawing upon known facts • 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 • multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 • recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3}) • solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign • solve problems involving multiplication and division, including scaling by simple

		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.* $3^3 = 3x3x3=27$	fractions and problems involving simple rates
Fractions, Decimals and Percentages	**Weeks 6-8**	**Weeks 7-8**	**Weeks 2-3**
	• 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*	• 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.* $^{12}/_{20} = {}^{60}/_{100} = 0.6 = 60\%$	• 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*

	• 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* $2^{5}/_{6} \times 3 = 6^{15}/_{6} = 8^{3}/_{6} = 8^{1}/_{2}$	• 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.* $^{2}/_{5} + {}^{7}/_{10} = {}^{11}/_{10} = 1^{1}/_{10}$ • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams *e.g.* $2^{5}/_{6} \times 3 = 6^{15}/_{6} = 8^{3}/_{6} = 8^{1}/_{2}$ • read and write decimal numbers as fractions *e.g. 0.69 = 69/100* • recognise and use thousandths and relate them to tenths,	*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* • 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?* **Weeks 7-9 (according to need)** • 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 = 11/5)* • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams

<table>
<tr><td></td><td></td><td>hundredths and decimal equivalents e.g. $^{650}/_{1000} = {}^{65}/_{100} = 0.65$
• round decimals with two decimal places to the nearest whole number and to one decimal place e.g. 27.59=27.6 (1d.p.)</td><td></td></tr>
<tr><td rowspan="2">Statistics</td><td>Weeks 9-12</td><td rowspan="2">PSHE LINK: Social skill: To know how to plan a journey on public transport.</td><td>Week 4 and Weeks 7-9 (according to need)</td></tr>
<tr><td>SCIENCE LINK: To be able to use the Earth's rotation to explain day and night.
• 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</td><td>• 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?
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<tr><td>Transition</td><td colspan="3">Summer Term Weeks 10–12</td></tr>
<tr><td></td><td colspan="3">Working towards expectations for Y6

Number and place value
• Pupils should be taught to:
• 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
• use negative numbers in context, and calculate intervals across zero</td></tr>
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	• solve number and practical problems that involve all of the above. **Addition, subtraction, multiplication and division** Pupils should be taught to: • 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 long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context • perform mental calculations, including with mixed operations and large numbers. • identify common factors, common multiples and prime numbers • use their knowledge of the order of operations to carry out calculations involving the four operations • 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 • use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.