

Weeks	Key knowledge	Previous experience (NCETM Guidance) Support gaps in learning	National Curriculum statement	NCETM links to PD materials MNP/Powermaths Calculation policy
Weeks 1 - 3	<p>Number, place value and rounding</p> <p>To be able to read, write and say numbers to 1, 000,000 using the comma separator</p> <p>Comparing and ordering numbers including negative numbers</p> <p>Rounding to the nearest 10, 100 and 1000.</p> <p>Expose rounding on a number line/ rule of 5 and above. Identifying the correct digit when rounding to the nearest 10, 100 or 1000</p> <p>Rearranging the number eg $142 = 100 + 30 + 12$ (getting ready for exchange)</p> <p>Being able to count forwards and backwards in the steps of the powers of 10 and know how to cross the boundary</p> <p>Understanding the value of each digit</p> <p>Positive and negative numbers</p>	<p>Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100.</p> <p>Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning.</p> <p>Reason about the location of any four-digit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each.</p>	<ul style="list-style-type: none"> ● 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. <p>Read Roman numerals to 1000 (M) and recognise years written in Roman numeral</p>	<p>MNP/ Powermaths books can supplement place value planning</p> <p>1:26 Composition and calculation: multiples of 1,000 up to 1,000,000 https://www.ncetm.org.uk/resources/52480</p> <p>TPs 1-3 (composition, comparing and ordering of these numbers) TP 5 (Rounding) TP 6 Known patterns can be used to divide 10,000 and 100,000 into two, four and five equal parts. These units are commonly used in graphing and measures.</p> <p>1:27 Negative numbers: counting, comparing and calculating. https://www.ncetm.org.uk/resources/52609</p>
Weeks 4-5	<p>Calculation and arithmetic of addition and subtraction</p> <p>Mental and written methods for large numbers</p> <p>Recognising the arithmetic in the question so they can choose and effective method. Eg $2999 - 1242$</p>	<p>Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10 or 100), for example:</p> <p>$8 + 6 = 14$</p> <p>$80 + 60 = 1400$</p> <p>$800 + 600 = 1,400$</p>	<p>To add and subtract whole numbers with more than 4 digits</p> <ul style="list-style-type: none"> ● To add and subtract numbers mentally with increasingly large numbers. ● To solve addition and subtraction multi-step problems in contexts, 	<p>1:26 Composition and calculation: multiples of 1,000 up to 1,000,000 https://www.ncetm.org.uk/resources/52480</p> <p>TP 4: Calculation approaches for numbers up to 1,000 can be applied to</p>

	<p>being seen as 3000 as 1243. Using effective processors so arithmetic is secure and applying bond knowledge. Efficiency and accuracy, and procedural competence Using rounding to check the reasonableness of the answer Understanding the columns Understanding the process of where to start and how to track through the written method No crossing of boundaries Crossing of boundaries (generating an exchanging digit)</p>	<p>Apply place-value knowledge to known additive number facts.</p> <p>Add and subtract up to three-digit numbers using columnar methods.</p> <p>Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and non-standard partitioning</p> <p>Manipulate the additive relationship: Understand the inverse relationship between addition and subtraction, and how both relate to the part-part-whole structure. Understand and use the commutative property of addition, and understand the related property for subtraction.</p>	<p>deciding which operations and methods to use and why. To add and subtract whole numbers with more than 4 digits, including using efficient written methods (columnar addition and subtraction).</p> <ul style="list-style-type: none"> ● 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. 	<p>multiples of 1,000 up to 1,000,000.</p> <p>1:28 Common structures and the part-part-whole relationship. https://www.ncetm.org.uk/resources/52610 TPs 1-4</p> <p>1:29 Using equivalence and the compensation property to calculate. https://www.ncetm.org.uk/resources/52611</p>
<p>Autumn themes integrated into number: staircase project or fire and ice project (to be confirmed) Contextualised learning: look for opportunities within topic curriculum</p>				
<p>Week 6</p>	<p>Properties of number: Understanding vocabulary and having clear definitions and generalisations. To use and understand the terms: factor, multiples, primes, squares, cubes composite numbers Understanding the notice of squared and cube numbers</p>	<p>Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number. Recognise multiples of 10, 100 and 1,000. Apply place-value knowledge to known additive and multiplicative number facts.</p>	<p>To identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <ul style="list-style-type: none"> ● ● To solve problems involving multiplication and division where larger numbers are used by decomposing them into factors. ● To know and use the vocabulary of 	<p>2:21 Factors, multiples, prime numbers and composite numbers. https://www.ncetm.org.uk/resources/53659</p>

			<p>prime numbers, prime factors and composite (non-prime) numbers.</p> <ul style="list-style-type: none"> ● To establish whether a number up to 100 is prime and recall prime numbers up to 19. <p>To recognise and use square and cube numbers</p>	
Weeks 7-9	<p>Calculation and arithmetic : Multiplication and division Apply tables knowledge in the context of place value eg $6 \times 7 = 42$ and 60×7 etc Understanding the relationships between the multiplication and division statements eg $6 \times 7 = 42$, $7 \times 6 = 42$ and $42 \div 7 = 6$ Facts and mental to written methods Mental strategies for partitioning for multiplication (96×6 could be 90×6 and 6×6) Mental strategies for rearranging for division ($96 \div 6$ could be partitioned into $60 \div 6$ and $36 \div 6$) distributive law Understanding multiplication as commutative Short standard method to long method – understanding the process of long multiplication so that the place value is secure Understand the associative law Short division method backed up by models and images (refer to calculation on policy)</p>	<p>Multiply and divide whole numbers by 10 and 100 (keeping to whole number quotients). Recall multiplication facts up to 12×12. Manipulate multiplication and division equations. Manipulate multiplication and division equations. Solve division problems, with two-digit dividends and one-digit divisors, that involve remainders, for example: $74 \div 9 = 8 \text{ r}2$ and interpret remainders appropriately according to the context. Understand and apply the distributive property of multiplication.</p>	<p>To multiply and divide numbers mentally drawing upon known facts.</p> <ul style="list-style-type: none"> ● 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. <p>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.</p>	<p>2:18 Using equivalence to calculate https://www.ncetm.org.uk/resources/53571 TPs 1 and 2</p> <p>2:14 Multiplication: partitioning leading to short multiplication https://www.ncetm.org.uk/resources/53538</p> <p>2:15 Division: partitioning leading to short division https://www.ncetm.org.uk/resources/53539</p> <p>Y6 2:23 Multiplication strategies for larger numbers and long multiplication (TPs 1-5 – TP 4 Long multiplication)</p>

Weeks 10-11	<p>Fractions: comparing and ordering and fractions as numbers (refer to fractions policy)</p> <p>Understand the denominator as equal parts and the numerator as how many equals parts numerator</p> <p>Understanding the whole and parts</p> <p>Variety of models used to understand the structure of fractions</p> <p>Developing understanding or denominator e.g the bigger the denominator the smaller the fraction</p> <p>Strategies for converting mixed numbers and improper fractions and vice- versa</p> <p>Simplifying fractions</p> <p>Understanding the relationship between timetables</p>	<p>Find unit fractions of quantities using known division facts (multiplication-tables fluency).</p> <p>Unitise using unit fractions (for example, understand that there are 3 one-fifths in three-fifths).</p> <p>Reason about the location of fractions in the linear number system.</p> <p>Reason about the location of mixed numbers in the linear number system.</p> <p>Convert mixed numbers to improper fractions and vice versa.</p> <p>Add and subtract improper and mixed fractions with the same denominator, including bridging whole numbers.</p>	<p>Recognise mixed numbers and improper fractions and convert from one form to the other. Dividing to make fractions.</p> <p>To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: $2/5 + 4/5 = 6/5 = 11/5$.</p> <p>To identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths.</p> <p>To compare and order fractions whose denominators are all multiples of the same number.</p> <p>To add and subtract fractions with the same denominator and multiples of the same number.</p>	<p>Y4</p> <p>3.5 Working across one whole: improper fractions and mixed numbers</p> <p>3.6 multiplying whole numbers and fractions</p> <p>MNP/ powermaths can be used to supplement planning</p> <p>Y3 (quick review to ensure fractions numbers sense)</p> <p>3.3 TP7: compare fractions – non-unit fractions with the same denominator can be compared. If the denominator is the same, then the greater the numerator, the greater the fractions.</p> <p>3.3 TP8: Non-unit fractions with the same denominator can be compared. If the numerators are the same, then the greater the denominator, the smaller the fractions.</p> <p>3.4 – add and subtract same denominator</p> <p>Y5</p> <p>3.7 Finding equivalent fractions and simplifying fractions</p> <p>3.8 Common denomination: more adding and subtracting</p>

Week 12: Opportunities for richer and deeper learning. Closing the gap. Cross-curriculum learning – fire and ice project.	
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