

Weeks	Key knowledge	Previous experience (NCETM Guidance) Support gaps in learning	National Curriculum statement	NCETM links to PD materials to support subject knowledge and small steps Cross-curricular links
Weeks 1	<p>Calculation and arithmetic of addition and subtraction – linked to word problems</p> <p>Mental and written methods for large numbers</p> <p>Recognising the arithmetic in the question so they can choose an effective method. Eg 2999 – 1242 being seen as 3000 as 1243.</p> <p>Using effective processors so arithmetic is secure and applying bond knowledge. Efficiency and accuracy, and procedural competence</p> <p>Using rounding to check the reasonableness of the answer</p> <p>Understanding the columns</p> <p>Understanding the process of where to start and how to track through the written method</p> <p>No crossing of boundaries</p> <p>Crossing of boundaries (generating an exchanging digit)</p>	<p>Knows efficient mental methods for addition and subtraction.</p> <p>Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10 or 100), for example: $8 + 6 = 14$ $80 + 60 = 1400$ $800 + 600 = 1,400$</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>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, deciding which operations and methods to use and why. <p>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 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>Y5</p> <p>1.26: composition and calculation: multiples of 1,000 up to 1,000,000.</p> <p>TP 1/2/3 ordering, comparing and composition of larger numbers</p> <p>TP 4 calculation approaches for numbers up to 1,000 can be applied to multiples of 1,000 up to 1,000,000</p> <p>1.28</p> <p>TP 2/3/4 common additive structures, solving problems</p> <p>1.29 using equivalence and the compensation property to calculate.</p> <p>TPs 1-6</p> <p>TP 5 numbers can be rounded to simplify calculations or to indicate approximate sizes.</p>

<p>Weeks 2-3</p>	<p>Calculation and arithmetic : Multiplication and division (progression through calculation policy) linked to word problems 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 \times 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: $74 \div 9 = 8$ r2 and interpret remainders appropriately according to the context. Understand and apply the distributive property of multiplication. Secure with multiplying 4 digits by 1 digit before moving onto the multiplying by 2 digits.</p>	<p>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. ● 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.</p>	<p>Y5 2.19: calculation \times/\div decimal fractions by whole numbers TP 1 decimal fractions (with a whole number of tenths or hundredths) can be multiplied by a whole number by using known multiplication facts and unitising. TP 2 multiplying by 0.1 is the same as dividing by 10; multiplying by 0.01 is the same as dividing by 100 Y6 2.23 multiplication strategies for larger numbers and long multiplication. Y4 (Division aspect) 2.15 Short division</p>
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<p>Week 4</p>	<p>Graphs and time Read and interpret information in tables and line graphs. Read and interpret information presented in tables eg train/flight etc. Use the data to answer questions, Understand how line graphs are used to represent a given set of data, Constructing line graphs that have more than one data set to represent. Be able to read 24-hour time. Be able to manage the absence of information in a table. Use a timeline to find the difference in time rather than addition or subtraction. Read columns and rows in a table. In line graphs, see the data as cumulative and independent Ensure pupils do not confuse one line for the other when there is more than one set of data. Interpret the relationship between two data sets.</p>	<p>Knows how to correctly present data using appropriate graphical methods. Knows how to use a greater range of scales in their representations. Knows the graphical representation of data to record change over time. Can tell the time fluently and effectively. Knows 5 times tables</p>	<p>Complete, read and interpret information in tables, including timetables. Solve comparison, sum and difference problems using information presented in a line graph.</p>	<p>1.26 Composition and calculation 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. 1.27 Negative numbers TP 4 Negative numbers can be shown on horizontal scales. TP 6 negative numbers are used in coordinate and graphing contexts Powermaths and MNP</p>
		<p>Spring themes integrated into number: Contextualised learning: look for opportunities within topic curriculum</p>		

<p>Weeks 5-7</p>	<p>Fractions: Add and subtract fractions with different denominator Multiply fractions (refer to fractions policy) Understand the denominator as equal parts and the numerator as how many equals parts numerator Understanding the whole and parts Variety of models used to understand the structure of fractions Developing understanding or denominator e.g the bigger the denominator the smaller the fraction Strategies for converting mixed numbers and improper fractions and vice-versa Simplifying fractions Understanding the relationship between timetables Understanding how to multiply a fraction by a whole integer Understanding how to read and interpret the calculation eg $6 \times 1\frac{1}{2}$ can be read as one and a half six times or six, one and a half times</p>	<p>Recall multiplication and division facts up to 12×12.</p> <p>Find unit fractions of quantities using known division facts (multiplication-tables fluency). Unitise using unit fractions (for example, understand that there are 3 one-fifths in three-fifths).</p> <p>Knows how to connect tables knowledge to families of common equivalents. Knows how to use factors and multiples to recognise equivalent fractions</p> <p>Reason about the location of fractions in the linear number system.</p>	<p>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 visually, including tenths and hundredths. To recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements > 1 as a mixed number: $2\frac{2}{5} + 4\frac{4}{5} = 6\frac{6}{5} = 11\frac{1}{5}$. 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.</p>	<p>Y4 3.5 Working across one whole: improper fractions and mixed numbers 3.6 multiplying whole numbers and fractions</p>
<p>Weeks 8-10</p>	<p>Decimals Read and write decimal numbers. Compare decimal numbers to</p>	<p>Knows how to write decimal equivalents of any number of tenths or hundredths. Knows that decimals and fractions</p>	<p>Read and write decimal numbers as fractions [for example, $0.71 = \frac{71}{100}$]. Recognise and use thousandths</p>	<p>2:19 Calculation: multiply and divide decimal fractions by whole numbers TP 1 Multiplying decimal fractions by a whole number</p>

<p>find which is greater and smaller. Learn about tenths, hundredths and thousandths. Be able to count, order and record the decimals in different ways. Begin to see equivalence between tenths and hundredths. See a link between different decimal values Be able to compare and order the numbers. Understand how to continue linear number sequences. Round decimals to the nearest whole number. Link tenths and hundredths with dividing by 10 and 100. Understand $\frac{1}{10}$ is read as 1 tenth and 0.1 is also read as 1 tenth. Know that $\frac{1}{10} = 0.1 = 1$ tenth. Have a good understanding of the base-10 number system. Be able to relate 1 tenth to 1 part out of 10 equal parts of 1. Know that there are ten 0.1 in 1. Know that 1 is 10 times as much as 0.1. Understand the role of zero as a placeholder. Be able to relate 1 hundredth to 1 part out of 100 equal parts of</p>	<p>are different ways of expressing numbers and proportions. Knows decimal notation and the language associated with it, including in the context of measurements. Divide powers of 10 into 2, 4, 5 and 10 equal parts.</p>	<p>and relate them to tenths, hundredths and decimal equivalents. Round decimals with two decimal places to the nearest whole number and to one decimal place. Read, write, order and compare numbers with up to three decimal places. Solve problems involving number up to three decimal places.</p>	<p>TP 2 Multiplying by 0.1 is equivalent to dividing by 10, (and by 0.01 is equiv to dividing by 100) TP 3 To multiply a single-digit number by a decimal fraction with up to 2dp, convert the dec to an integer by multiplying by 10 or 100, perform calculation, then adjust by dividing by 10 or 100. TP 4 If the multiplier is <1, the product is less than the multiplicand; if the multiplier is >1, the product is greater than the multiplicand. TP 5 (same as TP 3 but for division by 10, 100)</p>
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<p>1. Be able to relate 1 hundredth to $\frac{1}{100}$. Be able to relate 1 hundredth to 0.01. Relate that 1 hundredth = $\frac{1}{100}$ = 0.01. Know that there are ten 0.01 in 0.1. Know that 0.1 is 10 times as much as 0.01. Identify hundredths using decimals. Convert fractions into tenths and hundredths. Write fractions as decimals. Represent decimals using concrete materials or pictorial representation. Write decimal numbers and mixed numbers on a number line. Convert fractions to compare them with decimals. Refer to decimals as tenths, hundredths and thousandths. Use the 'greater than' and 'less than' symbols. Identify which number is bigger by looking at the first decimal place. Add and subtract decimals – understand place value. Use the column method to add and subtract decimals.</p>			
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	Rename and regroup tenths, hundredths and thousandths using the column method. Lay out the column method accurately, using decimal numbers.			
Week 11	<p>Position and movement</p> <p>Naming and plotting points on a grid</p> <p>Translation of a shape. Realise translations are described in two movements: horizontal and vertical.</p> <p>Describe the movement of a shape on a grid as the first step in describing reflections.</p> <p>Remember how to write coordinates with x and then y in brackets.</p> <p>Use language of horizontal and verticals to describe the axis.</p> <p>Visualise shapes which are incomplete.</p> <p>Placing mixed numbers on a number line or an axis.</p> <p>Explain what translation means.</p> <p>Record the vertices of a shape after a translation and write the coordinates correctly.</p> <p>Use concrete materials to support understanding</p>	<p>Identify / name the horizontal axis (x) and the vertical axis (y).</p> <p>Place objects in a numbered and lettered grid, e.g., Put the horse in square A5.</p> <p>Scaling in equal divisions and on the lines, not in the spaces; first quadrant.</p> <p>Know that counting of scales starts from the origin (where the x and y axes cross).</p> <p>Be able to give an xy co-ordinate for a point on a grid.</p> <p>☑ Be able to explain why (4, 1) is not the same as (1, 4).</p> <p>Know that the term 'translate' means movement and could be up or down, left or right but the shape is not changed in any other way.</p> <p>Draw a simple shape from written co-ordinate instructions, e.g., square or rectangle.</p> <p>Write the co-ordinates</p>	<p>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.</p>	<p>Powermaths and MNP, WR</p>
<p>Week 12: Opportunities for richer and deeper learning.</p> <p>Closing the gap.</p> <p>Cross-curriculum learning</p>				