Mathematics Journey Planner: Year 4

OVERVIEW & BIG IDEAS					
AUTUMN		SPRING		SUMMER	
3 weeks	**The Number System: four digit numbers** The value of a digit is determined by its position in a number. Place value must be explored in terms of the value of each digit (additive partitioning) and its overall value, as well as its position relative to other numbers.	**2 weeks**	**The Number System: decimal fractions** Fractions are equal parts of a whole and 1/10 = one whole divided into 10 pieces. The other big idea introduced in this unit of work is that our number system is base 10 and decimal fractions 0.1 are linked to other fractions.	**2 weeks**	**The Number System: decimal fractions** Fractions are equal parts of a whole and 1/10 = one whole divided into 10 pieces. The big idea introduced in this unit of work is that our number system is base 10 and decimal fractions 0.1 are linked to other fractions.
4 weeks	**Calculating, Patterns & Algebra + and –** Calculate don't count! The big idea is using a whole-part model to picture addition and subtraction. Drawing bar models will help to picture which operation to do. Rounding can help to get a sense of the size of the answer. Numbers should be looked at before a method is chosen to decide which will be most efficient.	**3 weeks**	**Calculating, Patterns & Algebra + and –** Calculate don't count! The big idea is using a whole-part model to picture addition and subtraction. Drawing bar models will help to picture which operation to do. Rounding can help to get a sense of the size of the answer. Numbers should be looked at before a method is chosen to decide which will be most efficient. Finding the difference on a number line is often most efficient when finding change from money.	**3 weeks**	**Calculating, Patterns & Algebra + and –** Calculate don't count! The big idea is using a whole-part model to picture addition and subtraction. Drawing bar models will help to picture which operation to do. Rounding can help to get a sense of the size of the answer before calculating. Numbers should be looked at before a method is chosen to decide which will be most efficient.
1 week	**Statistics** Data is collected with a purpose in mind and can be represented in different ways. Numerical data can be discrete or continuous.	**1 week**	**Measures: Time** Time is measured different units/bases from what we are used to with metric measures. There are 60 seconds in a minute, 60 minutes in an hour, 24 hours in a day etc.. Therefore children need to use number lines to help them efficiently calculate time differences.	**3 weeks**	**Calculating, Patterns & Algebra: X and ÷** The big ideas to be explored are partitioning, scaling and recombining: When we multiply by 10, the product is 10 times larger. This understanding is the basis for grid method and formal multiplication. The distributive law is also important as children explore how numbers are partitioned, multiplied and recombined. Multiplication and division's inverse relationship is the basis of solving division problems and finding remainders. Making links and generalisations between facts is a crucial step. If I know… I also know…
2 weeks	**The Number System: Fractions *as* numbers** Fractions are equal parts of a whole and they represent a relationship between a whole and parts of a whole. Equivalency: fractions that look very different in their notation may be equal.	**3 weeks**	**Calculating, Patterns & Algebra: X and ÷** The big ideas to be explored are partitioning, scaling and recombining: When we multiply by 10, the product is 10 times larger. This understanding is the basis for grid method and formal multiplication. The distributive law is also important as children explore how numbers are partitioned, multiplied and recombined. Multiplication and division's inverse relationship is the basis of solving division problems and finding remainders. Making links and generalisations between facts is a crucial step. If I know… I also know…	**2 weeks**	**The Number System: fractions of numbers** Fractions are equal parts of a whole. This whole can be an amount or a number. We can find fractions of numbers. Equal parts of shapes do not need to be congruent but need to be equal in area. Fractions arise when the solution to a problem falls between two whole numbers.
3 weeks	**Calculating, Patterns & Algebra X and Division** Many big ideas come together here!... Unitisation, scaling, inverse relationships, partitioning and recombining and the distributive law. Multiplication can be related to times tables as repeated addition. The big idea is one of 'unitisation' where children count in 'groups of' a number. Division can be seen as 'how many groups of' or sharing. The inverse relationship will also be explored through arrays and bar models. Links must be made between facts i.e. X5 half of X10. The distributive law can be used to partition numbers in different ways, multiply then recombine.	**2 weeks**	**The Number System: fractions of numbers** Fractions are equal parts of a whole. This whole can be an amount or a number. We can find fractions of numbers. Equal parts of shapes do not need to be congruent but need to be equal in area.		
1 week	**Measures** Children should develop benchmarks for different measures e.g. the weight of a bag of sugar, the capacity of a mug, to help them to estimate. The smaller the unit, the greater the number of units required to measure i.e. 10mm = 1m.	**1 week**	**Geometry & Measures** Shapes are categorised according to their properties and can belong to more than one category. Sometimes this is the number of sides they have, or the sizes of their angles. Shapes are still congruent if they are at different orientations Area is another way of looking at multiplication and it has an inverse relationship with side length (of rectilinear shapes).	**2 weeks**	**Geometry: position and direction** Angles are measure of a turn and the lengths of lines used to show the angle do not change its size. Directions are linked to turns and positions (co-ordinates) are marked in a quadrant formed by axes found in graph work.

Mathematics Journey Planner: Year 4			
To be used as a basis for unit planning, combined with the calculation or progression policy. Each unit of work should include several problem solving lessons. NRICH is a great resource for this and has problems mapped to the curriculum here. NCETM progression maps are useful for dialling it back for children working below Y4 levels. NCETM mastery assessment document is wonderful for deepening. ***Remember the aims of the National Curriculum are: fluency, reasoning and problem solving!***			
Timing		**Fluency**	**Destinations for reaching expected Y4 level** with teaching notes.
AUTUMN	3 WEEKS	Count in steps of 25, 50, 100 and 1,000 Count backwards through zero to include negative numbers. Halving (this supports number line work by estimating where half way is)	**The Number System: Whole numbers to four digits** ***Read and write four digit numbers*** Noting the pattern of three digits and commas. ***Recognise the place value of each digit in a four digit number (thousands, hundreds, tens and ones) – the significance of the position of each digit to its value/size*** Partitioning using arrow cards, base ten and place value counters. Making numbers using digits cards. Partition numbers in different ways i.e. 1,256 = 1,000 + 200 + 50 + 6 = 1,000 + 200 + 40 + 16 etc. Explore these patterns. Explore questions such as 'how many ones in 80?' 'How many tens in 800?' to deepen understanding! ***Order and compare numbers beyond 1,000 – numbers in relation to each other*** Placing on a number line and finding nearest multiples of 10, 100 etc. Beginning rounding and estimating. Explore the idea of = as equivalence and balance using empty box partitions *Round any number to the nearest 10, 100 or 1000.* Use a number line to support this as a key image. Remember that number lines do not need to sit horizontally, or start at zero! ***Find 1000 more or less than a given number.*** Use number lines, broken number squares (e.g. a cross shape or L shape) *Solve number and practical problems that involve all of the above and with increasingly large positive numbers.* Solve empty box problems that rely on understanding of place value. Include problems with = and inequalities <>

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
AUTUMN	4 WEEKS	KS1 review: mental addition strategies without counting on! **Calculate don't count**: - Quick adds e.g. 20 + 7 then 23 + 6 'because I know 3 + 6 = 9' - Using bonds to 10 - Partitioning single digit numbers in different ways to bridge 10 e.g. 27 + 5 = 27 + 3 + 2 - Finding near doubles rather than adding e.g. 30 + 31 - Adding multiples of 10 and nearly numbers like 19 by spider counting and adjusting. - Add strings of numbers by finding bonds and doubles. Reinforce law of commutativity for + so we don't have to do it from left to right! Count in multiples of 6, 7 and 9 Play games such as Shall I risk it? Find rules and missing numbers in additive sequences.	**Calculating, Patterns & Algebra + and –** ***Add and subtract numbers mentally (take away not find the difference), with and without bridging including:*** **a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds** Write calculations horizontally and tell children to assess whether mental methods will be quick and efficient. If they will do it mentally, which method will they use? See fluency to the left. Use number lines for mental jottings. Estimate, check with inverse and solve word problems which can be solved using this mental method. ***Subtract using informal mental methods – finding the difference*** Review of Y3: Begin slowly with the concept of difference. E.g. which numbers have a difference of 1, 2, 5 or 10? Use Numicon to show 'difference' Find the difference on a number line by counting up. NB numbers should not be far apart or lend themselves better to 'take away' Estimate, check with inverse and solve word problems which can be solved using this mental method. ***Add numbers with up to four digits using compact columnar addition*** Use base 10, then place value counters to ensure understanding of compact method. Add numbers with multiple carrying. Add numbers with different numbers of digits. Add piles of numbers (more than 2 numbers) where the carry goes over 20. Find bonds to 10 and doubles in your pile to add quickly! Estimate, check with inverse and solve word problems which can be solved using this mental method. Use inverse to check subtraction… ***Subtract numbers with up to four digit numbers using compact columnar subtraction*** Y3 Review: Partition, use base 10 and then place value counters. Partition numbers in different ways as a precursor to columnar subtraction. E.g. 124 = 100 + 20 + 4 or 100 + 10 + 14 etc. Explore these types of patterns. Show expanded subtraction alongside compact to ensure understanding. Design calculations so they can't be done quickly mentally and use intelligent practice e.g. one exchange from tens to ones, then multiple exchanges, then what happens when there's a zero! Use base 10 and then place value counters. Solve word problems which can be solved using this written method. Estimate answers first using rounding and check with the inverse. ***Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.*** Write calculations in different ways e.g. 23 = ? + 12 ; 43 + 25 = ? – 8; and 12 + 15 < ? – 2 Use bar models to show whole part-part inverse relationships.

Mathematics Journey Planner: Year 4

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
AUTUMN	1 WEEK	Counting in 10s 5s 20s 25s Finding missing numbers on scales and working out the intervals.	**Statistics** ***Interpret and present discrete and continuous data using bar charts, time line graphs, pictograms and tables.*** Remember to keep bars separate from each other. Make a transition from pictograms to bar charts. Use different scales. Make links with science and topic projects when presenting data. Use a ruler to find points on a line graph. Remember to explore a 'naked' graph with no labels and say what it *could* represent! ***Solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs.*** Relate the scales of bar charts to number lines. Draw on methods of + and – used in previous unit of work.
AUTUMN	2 WEEKS	Review from Year 3: Count in fractions up to 10, starting from any number and using different fraction families i.e. 1/5 family or ¼ family. Explore equivalence as you go. Use a counting stick to count in 1/3s beyond 1 whole! Discuss equivalence… how else could we say 4/3? Find rules and missing fractions in sequences.	**The Number System: Fractions *as* numbers** ***Recognise and show, using diagrams, families of common equivalent fractions*** Review equal and unequal pieces and understanding of ½ family fractions and 1/10 family of fractions. Find fractions of shapes linking to equivalence e.g. If you have 3/6 shaded on a shape, this is the same as ½. Explore shapes with the same area (same fraction) but different shapes (not congruent) Use / build fraction walls showing equivalence between families. Use fraction cards to explore equivalence within one family …. 1/3 1/6 1/12 ***Add and subtract fractions with the same denominator*** Use fraction cards to add and subtract fractions within the same family, starting with those with the same denominator. These may tip over one whole into improper fractions and mixed numbers. https://www.ncetm.org.uk/resources/43609 Some children can now compare and order unit fractions with different denominators within the same family i.e. They have a common denominator.

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
AUTUMN	3 WEEKS	Doubling and halving by partitioning Multiply numbers by 10 and 100 and 1000 Divide multiples of 100 by 20 and 25 by chunking in 20s or 25s. Find rules and missing numbers in sequences. (Not always horizontally… show sequences with circles and arrows between, for example. Include missing numbers on measuring scales too!)	**Calculating, Patterns & Algebra X and Division** ***Recall and use multiplication and division facts for multiplication tables up to 12 X 12*** Assess which times tables children have the most difficulty in recalling rapidly. Repeat teaching and chanting of these. Make links with doubling and doubling where it is useful. Make links with properties of numbers. Explore the law of commutativity by showing arrays. These are factor pairs. Create 'If I know this… I know that… 'statements. Multiply by 0 and 1 and then divide by 1. Multiply three numbers together. Explain the ÷ as 'how many groups of this are in that' and as the inverse of multiplication. Use derived facts to divide mentally. Find remainders (picture this on a number line, chunking forwards or using arrays). Divide numbers related to times table facts mentally e.g. I know 42 ÷7 = 6 so 420 ÷7 = 60 Explore the effect of multiplying numbers by 10, 100 and 1,000 ***Use recall of multiplication and division facts and place value to multiply larger numbers mentally.*** Use procedural variation to explore patterns and the *effect of multiplying a number by 10 or 100 e.g.* *3 X 7 = 21 30 X 7 = 210 30 X 70 = 2100 3 X 70 = 210 etc.* This is the idea of scaling… one of the numbers is 10 times bigger than the one in a previous equation etc. Avoid misconceptions about 'adding zeros'. ***Multiply two digit and three digit numbers by a one digit number using formal written layout (short multiplication)*** Ensure that calculations don't lend themselves to using a mental method like doubling and doubling again to X4! For example, calculate 14 X 4 by…Doubling 14 and doubling again or 14 X 4 = (10 X 4) + (4 X 4) … the distributive law. Use grid method until the children are secure in their place value. Show expanded columnar multiplication next to grid method, examining the links. Show expanded columnar method next to compact short multiplication, examining the links. Explore misconceptions e.g. 50 X 8 within a grid is often mistakenly recorded as 40 rather than 400 Solve word problems which can be solved using this method.

Mathematics Journey Planner: Year 4

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
AUTUMN	1 WEEK	Multiplying and dividing by 10, 100 and 1,000 Estimating where numbers should be placed on different number lines (scales)	**Measures** ***Estimate, compare and calculate different measures.*** Focus on measuring capacity, mass and length accurately using practical equipment. Relate scales to a different type of number line. ***Convert between different units of measure [for example, kilometre to metre].*** Explore this under the banner of 'equivalence'. Compare and estimate different masses, lengths and capacities. Use measuring equipment to show equivalence on scales. E.g. show 0-1kg on a line next to 0-1,000g and find equivalences. Include scales and parts of scales which do not go from 0-1 … i.e. 3 – 4 kg next to a line of 3,000 – 4,000 g Solve word problems which can be solved using measures and several of the four operations.
SPRING	2 WEEKS	Counting in 0.1s on a counting stick. Don't always start at 0 Count in 0.01s 0.05s and 0.1s	**The Number System: decimal fractions** *Review from Y3: Count up and down in tenths written as vulgar fractions then show decimal equivalents.* *Write the decimal equivalent of any number of tenths.* Use a counting stick, number lines and bar models to show tenths. Explain the use of the decimal point as a fixed point showing the difference between whole 1s and tenths. Explore what happens when you add 0.1 to 0.9… not 0.10 Use base ten rods of 10 to represent 'one tenth' and a slab of 100 to represent 1. Find complements of tenths to 1. ***Round decimals with one decimal place to the nearest whole number.*** Placing on a number line (lines of different scales with different starting and end points) and finding nearest whole number. Comparing with inequalities <> and the = symbol ***Recognise that hundredths arise when dividing by 100*** Explore different representations of hundredths including a Numicon 100 base, and a base 10 slab of 100 to represent 1. Each small cube – usually representing 1 – now represents 0.01. Zoom in on number lines to show 1 divided first into 10 pieces then into 100 pieces. Emphasise the significance of the position of each digit to its value/size using arrow cards and place value counters. Ask questions such as 'how many tenths in 2?' 'How many hundredths in 0.2?' to deepen understanding! ***Count up and down in hundredths*** Relate hundredths to money because £1 is made up of 100 p Count in 0.01s 0.05s and 0.1s Explore why 0.10 = 0.1 and 0.20 = 0.2 etc. linking tenths and hundredths. Link money or cm and mm where it will be clearer to the children to do so.

Mathematics Journey Planner: Year 4

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
SPRING	3 WEEKS	Making and comparing numbers using digits cards Count in multiples of 6, 7 and 9 Step counting in multiples of 19 or 21 … you could use different starting points! Find rules and missing numbers in additive sequences. (Not always horizontally… show sequences with circles and arrows between, for example.)	**Calculating, Patterns & Algebra + and –** ***Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate*** Use base 10, then place value counters and show expanded and compact next to each other to see links. *Estimate answers first using rounding and check with the inverse. Using addition to check these subtractions and vice versa…* Partition use base 10 and then place value counters. Partition numbers in different ways as a precursor to columnar subtraction. E.g. 124 = 100 + 20 + 4 or 100 + 10 + 14 etc. Explore these types of patterns. Design calculations so they can't be done quickly mentally and use intelligent practice e.g. one exchange from tens to ones, then multiple exchanges, then what happens when there's a zero! Solve word problems which can be solved using these methods. Use base 10 and then place value counters. ***Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.*** **Write calculations in different ways e.g. 123 =? + 112; 443 + 225 = ? – 18; and 102 - 15 < ? – 2** Use bar models to show whole part-part inverse relationships. Children can draw these to help them solve missing number problems by seeing which operation is required. Solve word problems which can be solved using written and mental methods. ***Solve simple money problems involving fractions and decimals to two decimal places.*** Use both mental (partition and add; add nearly numbers; partition and take away; subtract nearly numbers; find the difference on a number line to find change) and written methods to solve money problems. Make sure you have plenty of plastic money and you can use a money 100p square.
SPRING	1 WEEKS	Count in 15s and 30s and 60s.	***Measures: Time*** Review of Y3:*Tell and write the time from:* - an analogue clock and 12-hour and 24-hour clocks; - an analogue clock, including using Roman numerals from I to XII. *Read, write and convert time between analogue and digital 12- and 24-hour clocks.* ***Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of zero.*** **You could discuss our metric system!** ***Solve problems involving converting from hours to minutes; minutes to; seconds; years to months; weeks to days.*** Review the number of seconds in a minute and the number of days in each month, year and leap year. Use mental methods (including finding the difference on a time line) to solve problems involving time difference and duration. Solve word problems which relate to time durations and conversions.

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
SPRING	3 WEEKS	Chant and memorise weaker times tables. Explore the effect of multiplying numbers by 10, 100 and 1,000. Explore the 20 X table, the 30 X table etc. Create 'If I know this… I know that… 'statements to supersize numbers e.g. 6 X 7 = 42 so 6 X 70 = 420. Find rules and missing numbers in multiplicative/doubling or halving sequences. (Not always horizontally… show sequences with circles and arrows between, for example.)	**Calculating, Patterns & Algebra: X and ÷** ***Recall and use multiplication and division facts for multiplication tables up to 12 X 12*** Re-assess which times tables children have the most difficulty in recalling rapidly. Repeat teaching and chanting of these. Make links with doubling and doubling where it is useful. Make links with properties of numbers. Use the word 'factor' and 'multiple' when discussing properties and patterns in times tables. Use derived facts to divide mentally. Find remainders (picture this on a number line, chunking forwards or using arrays). Divide numbers related to times table facts mentally e.g. I know 42 ÷7 = 6 so 420 ÷7 = 60 Multiply three numbers together. Explain the ÷ as 'how many groups of this are in that' and as the inverse of multiplication. ***Use recall of multiplication and division facts and place value to multiply larger numbers mentally.*** Use procedural variation to explore patterns and the effect of multiplying a number by 10 or 100 e.g. *3 X 7 = 21 30 X 7 = 210 30 X 70 = 2100 3 X 70 = 210 etc.* This is the idea of scaling… one of the numbers is 10 times bigger than the one in a previous equation etc. Avoid misconceptions about 'adding zeros'. ***Multiply two digit and three digit numbers by a one digit number using formal written layout (short multiplication)*** Ensure that calculations don't lend themselves to using a mental method like doubling and doubling again to X4! For example, calculate 14 X 4 by…Doubling 14 and doubling again or 14 X 4 = (10 X 4) + (4 X 4) … the distributive law. Move towards compact multiplication as soon as children are secure. Show expanded columnar multiplication next to grid method, examining the links. Show expanded columnar method next to compact short multiplication, examining the links. Solve word problems which can be solved using mental or written X ***Divide mentally (progressing to formal written method)*** Use 'chunking forward' on a number line to solve problems such as 123 ÷ 3 by jumping forward in groups of 10 X 3 to 120 (or using 40 X 3) then showing one more group of 3 so the answer is 41. Solve word problems which can be solved using ÷. It is not in the curriculum to teach formal short division until Year 5 but this could definitely be explored by children who are secure in their x tables facts and finding remainders. Show short division 'bus stop' method using place value counters representing the number to be divided, split into 100s 10s and 1s. When children have a secure understanding and rapid recall of times tables facts, progress to short division including remainders.

Mathematics Journey Planner: Year 4

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
SPRING	2 WEEKS	Chanting 6 X table and the 8X table (review from Y3) Find rules and missing numbers in multiplication sequences, revising multiples they should know up to 12 X 12 (Not always horizontally… show sequences with circles and arrows between, for example. Include missing numbers on measuring scales too!)	**The Number System – fractions of numbers** ***Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.*** Find 1/10 and then 2/10 etc. of numbers by dividing by 10. Link this to work done previously on 0.1 of a number and dividing a number by 10. Find 1/6 of a number, linking to multiplication and division facts. Show this pictorially with a bar model. Don't just teach a trick of dividing by the denominator and multiplying by the numerator! Find 2/6 or 3/6 etc. of a shape or a number. Link to equivalence. Is this the same as 1/3 of the same number? Repeat with 1/8 after chanting the 8 times table and reviewing division facts. Solve word problems which relate to finding fractions of numbers in real life contexts.
SPRING	1 week	Doubling (link to perimeter) Count in steps of 5 or 10^{o} until you reach a right angle. Use a squeaky voice for all acute angles then a low voice for obtuse angles. Show angles with hands Chant weaker X tables	**Geometry & Measures** ***Measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres.*** *Find the area of rectilinear shapes by counting squares.* Show the link between the side lengths and the area. ***Identify acute and obtuse angles and order angles up to two right angles by size.*** Explore the idea of an angle being a measure of a turn. Compare and estimate angles. Show but don't worry too much about protractors! Spot right angles at different orientations. Compare with obtuse or acute angles in quadrilaterals. ***Compare and classify geometric shapes including quadrilaterals and triangles (spend a few lessons on each group of shapes)*** *Identify lines of symmetry in 2-D shapes presented in different orientations.* Analyse properties e.g. acute and obtuse angles, equal angles, equal sides and lines of symmetry etc. Make sure angles and shapes are at different orientations and different sizes. ***Complete simple symmetrical figures in relation to a specific line of symmetry.*** Visualise and count away from the mirror line, positioning vertices or parts of a pattern and then working away further from the mirror line. Use a mirror to check not to 'do'.

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
SUMMER	2 WEEKS	Count up and down in tenths finding equivalents e.g. 5/10 = 0.5 = half Solving empty box/missing number problems including those with inequalities. Divide numbers by 10 including whole numbers which will become 1 place decimal numbers.	**The Number System: Decimal fractions** ***Recognise and write decimal equivalents of any number of tenths or hundredths.*** Review models and images of decimals including placing them on number lines from previous terms. ***Compare numbers with the same number of decimal places up to two decimal places.*** Partitioning two decimal place numbers into 1s, 0.1s and 0.01s then comparing them. Placing on a number line and finding nearest whole numbers. Comparing with inequalities <> and the = symbol Find complements to 1. ***Recognise and write decimal equivalents to $^1/_4$, $^1/_2$, $^3/_4$.*** Using a blank 100 square to represent hundredths, explore why ½ = 0.5 and ¼ = 0.25 and ¾ = 0.75
SUMMER	3 WEEKS	Measure, compare, add and subtract mass (kg/g); Measure, compare, add and subtract volume/capacity (l/ml). Find rules and missing numbers in additive sequences. (Not always horizontally… show sequences with circles and arrows between, for example. Include missing numbers on measuring scales too!)	**Calculating, Patterns & Algebra + and –** *Review from Y3 and link to lots of decimal work: Add and subtract amounts of money to give change, using both £ and p in practical contexts.* Find the change from £1, £5 etc. where columnar would not be as efficient. ***Solve simple measure problems involving fractions and decimals to two decimal places.*** Use word problems and the contexts of measuring length, mass and capacity to solve problems. Be sure to use calculations which wouldn't be solved more efficiently mentally. Estimate answers first using rounding and check with the inverse. ***Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.*** Provide lots of calculations (and word problems) which require different approaches to be solved most efficiently.

Timing		Fluency	Destinations for reaching expected Y4 level with teaching notes.
SUMMER	3 WEEKS	Chanting weaker times tables needed up to 12 X 12. Finding division facts by using the inverse of times tables. Count in multiples of 6, 7, 9, 25 and 1000. Relate these to finding rules and missing numbers in multiplicative sequences. (Not always horizontally… show sequences with circles and arrows between, for example. Include missing numbers on measuring scales too!)	**Calculating, Patterns & Algebra: X and ÷** ***Recall and use multiplication and division facts for multiplication tables up to 12 X 12*** Re-assess which times tables children have the most difficulty in recalling rapidly. Repeat teaching and chanting of these. Make links with doubling and doubling where it is useful. Make links with properties of numbers. Use the word 'factor' and 'multiple' when discussing properties and patterns in times tables. Use derived facts to divide mentally. Find remainders (picture this on a number line, chunking forwards or using arrays). Divide numbers related to times table facts mentally e.g. I know 42 ÷7 = 6 so 420 ÷7 = 60 ***Find the effect of dividing a one-/two- digit number by 10 & 100, identifying the value of digits in answer as ones, tenths & hundredths.*** This is related to scaling and should be linked to work on products being 'ten times bigger' if multiplied by 10. ***Solve problems, including missing number problems, integer scaling problems, and correspondence problems involving multiplying and adding including using the distributive law to multiply TO by O*** Use known times table facts and derived facts. Solve word problems which can be solved using mental X Scaling examples: What is three times as long as 17cm? My ribbon is 4 times as long as Rosie's. Rosie's is 18cm. How long is mine? ***Use recall of multiplication and division facts and place value to multiply larger numbers mentally.*** Use procedural variation to explore patterns and the *effect of multiplying a number by 10 or 100 e.g.3 X 7 = 21 30 X 7 = 210 30 X 70 = 2100 3 X 70 = 210 etc.* This is the idea of scaling… one of the numbers is 10 times bigger than the one in a previous equation etc. Avoid misconceptions about 'adding zeros'. Solve word problems which can be solved using mental X and scaling. ***Multiply two digit and three digit numbers by a one digit number using formal written layout (short multiplication)*** Ensure that calculations don't lend themselves to using a mental method like doubling and doubling again to X4! For example, calculate 14 X 4 by…Doubling 14 and doubling again or 14 X 4 = (10 X 4) + (4 X 4) … the distributive law. Move towards compact multiplication as soon as children are secure. Show expanded columnar multiplication next to grid method, examining the links. Show expanded columnar method next to compact short multiplication, examining the links. Pose word problems which can be solved using written X. ***Divide mentally (progressing to formal written method)*** Use 'chunking forward' on a number line to solve problems such as 123 ÷ 3 by jumping forward in groups of 10 X 3 to 120 (or using 40 X 3) then showing one more group of 3 so the answer is 41. Pose word problems which can be solved using ÷. It is not in the curriculum to teach formal short division until Year 5 but this could definitely be explored by children who are secure in their x tables facts and finding remainders. Show short division 'bus stop' method using place value counters representing the number to be divided, split into 100s 10s and 1s. When children have a secure understanding and rapid recall of times tables facts, progress to short division including remainders.

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SUMMER	2 WEEKS	Count in multiples of 7. Chant the 7X table	**The Number System fractions of numbers** ***Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number.*** Find 1/7 and then 2/7 etc. of numbers by dividing by 7. Link this to work done previously finding fractions of numbers. Use 'would you rather' style problems e.g. would your rather have 1/3 of £15 or 1/7 of £49? Begin to explore inverse problems i.e. 1/7 of my number is 5. What is my number? Use bar models to solve these. Pose word problems which can be solved by finding fractions of numbers in real life contexts.
SUMMER	2 WEEKS	Count in multiples of 6, 7, 9, 25 and 1000. Relate these to finding rules and missing numbers in multiplicative sequences. (Not always horizontally… show sequences with circles and arrows between, for example. Include missing numbers on measuring scales too!)	**Geometry: Position & Direction** ***Describe positions on a 2-D grid as coordinates in the first quadrant.*** ***Describe movements between positions as translations of a given unit to the left/right and up/down.*** ***Plot specified points and draw sides to complete a given polygon.*** Relate axes to graphs drawn in statistics lessons and to number lines in general. Review 2-D shapes learnt earlier in the year and their properties. Complete half completed shapes by positioning the final vertex. Explore 'translation' as a 'slide'. Each vertex slides the same amount so the shape stays congruent and does not enlarge or change its dimensions.