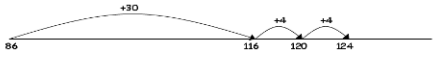
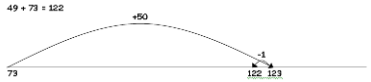
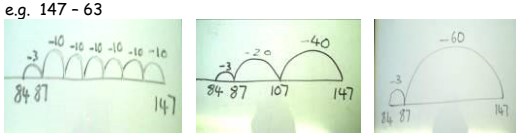
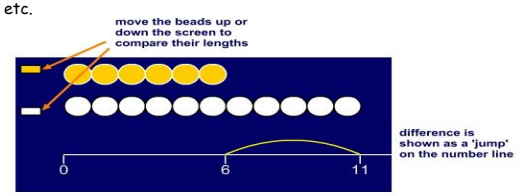
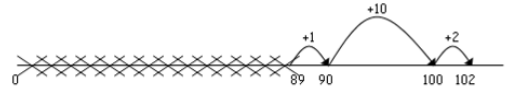
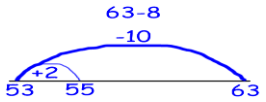
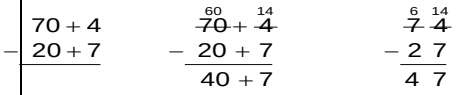
In order to encourage children to work mentally, calculations should always be presented horizontally so children can make decisions about how to tackle them.
Encourage children to choose to use the most efficient method for the numbers and the context. Teach operations together to emphasise the importance of inverse.

	National Curriculum	Guidance	Addition To be taught alongside each other	Subtraction	Vocabulary
Y3	Pupils will be taught to: add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds add and subtract numbers with up to three digits, using the efficient written methods of columnar addition and subtraction estimate the answer to a calculation and use inverse operations to check answers solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7]	Pupils will practise solving varied addition and subtraction questions. For mental calculations with two-digit numbers, the answers could exceed 100. Pupils will use their understanding of place value and partitioning, and practise using columnar addition and subtraction with increasingly large numbers up to three digits to become fluent.	Children will continue to use empty number lines with increasingly larger numbers and will begin to use informal methods (jottings) to support, record and explain partial mental methods, building on existing mental strategies. **Counting on** **Count on from the largest number irrespective of the order of the calculation. Bridge through tens and begin to bridge through 100's.** E.g. 38 + 86 = 124  **Compensation (for near multiples of 10)** e.g. 49p + 73p = 122p  **Expanded informal method using place value** (Introduce practically. Encourage children to use when the calculation can't be done mentally. *Model first* with simpler numbers which they can solve mentally). Model expanded horizontal partitioning with Base 10. 67 = 60 + 7 +24 20 + 4 91 = 80 + 11 243 = 200 + 40 + 3 +435 400 + 30 + 5 678 = 600 + 70 + 8	Children will continue to use empty number lines with increasingly large numbers and will begin to use informal methods (jottings) to support, record and explain partial mental methods, building on existing mental strategies. **Counting back** **Subtracting the tens in one jump and the units in one jump (focus on efficiency… e.g. challenge children to solve subtraction calculations in two steps)** 147 -23 = 147 – 20 = 127 127 – 3 = 124 *Bridging through ten can help children become more efficient.* e.g. 147 – 63  **Counting on** Use Finding the difference ITP between two numbers by counting on. Relate to every day contexts such as age, height, length etc.  Where the numbers involved in the calculation are close together or near to multiples of 10, 100 etc. counting on using a number line should be used, alongside resources like bead bars. 102 – 89 = 13  **Compensation (for near multiples of 10)** 63 – 8 = 55  **Expanded informal method using place value** 67 = 60 + 7 -24 - 20 + 4 43 = 40 + 3 Leading to the compact written method (see Y4) Example: 74 – 27  Develop into 3 digit – 2 digit numbers modelling with Base 10. Partition 3 digit numbers into ways that are helpful for the subtraction. E.g. 325 – 58 = 325 – 25 – 25 – 5 – 3 = 267 Or 325 – 58 = 267 so 325 becomes 200 + 110 + 15 - 50 - 8 200 + 60 + 7 (Encourage children to use when the calculation can't be done mentally. *Model first* with simpler numbers which they can solve mentally).	+, add, addition, more, plus make, sum, total altogether score double, near double one more, two more... ten more... one hundred more how many more to make…? how many more is… than…? how much more is…? –, subtract, subtraction, take (away), minus leave, how many are left/left over? one less, two less… ten less… one hundred less how many fewer is… than…? how much less is…? difference between half, halve =, equals, sign, is the same as tens boundary, hundreds boundary

Encourage children to check results by using the inverse, using a different method e.g. equivalent calculation and by estimation where appropriate.

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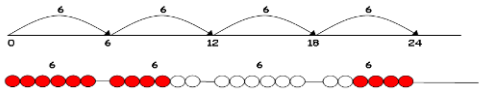
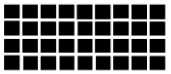
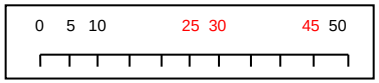
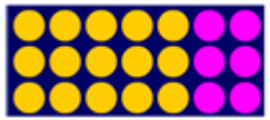
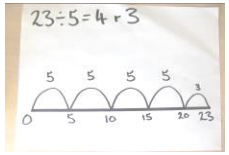
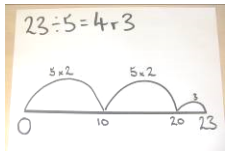
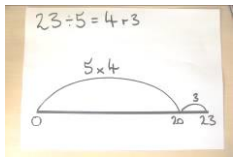
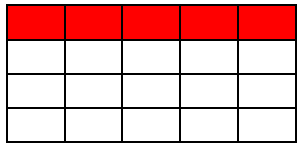
	National Curriculum	Guidance	Multiplication To be taught alongside each other Division	Vocabulary
Y3	**P**upils should be taught to: Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to efficient (including 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.	Pupils should continue to practise their mental recall of multiplication tables when they are calculating mathematical statements in order to improve fluency. Through doubling, they connect the 2, 4 and 8 multiplication tables. Pupils should develop efficient mental methods, for example, using commutativity (e.g. 4 × 12 × 5 = 4 × 5 × 12 = 20 × 12 = 240) and multiplication and division facts (e.g. using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (30 × 2 = 60, 60 ÷ 3 = 20 and 20 = 60 ÷ 3). Pupils should develop reliable written methods for multiplication and division, starting with calculations of two-digit numbers by one-digit numbers and progressing to the efficient written methods of short multiplication and division. Pupils should solve simple problems in contexts, deciding which of the four operations to use and why, including measuring and scaling contexts, and correspondence problems in which m objects are connected to n objects (e.g. 3 hats and 4 coats, how many different outfits; 12 sweets shared equally between 4 children; 4 cakes shared equally between 8 children).	**Multiplication** Children will continue to use: **Repeated addition** 6 multiplied by 4 = 6 x 4 = 6 'four times' 4 times 6 is 6 + 6 + 6 + 6 = 24 or 4 lots of 6 Children should use number lines or bead bars to support.  **Arrays** Increasingly use arrays to make links between x and ÷. Children should model a multiplication calculation using an array. This knowledge will support the development of the grid method.  9 × 4 = 36 4 × 9 = 36 36÷ 9 = 4 36 ÷ 4 = 9 Important for teachers to be consistent. Either seen as a row of 9, 4 times (9 x 4)… or a column of 4, 9 times (4 x 9). Both are correct Moving towards 2 digit x 1 digit using place value. 90 x 4 = 40 x 9 = 360 360 ÷ 9 = 40 360 ÷ 4 = 90 **Derive facts from unknown facts** Use number line to show known multiplication facts and then derive unknown facts. E.g. if you know 5 x 10 = 50. Count back 5 to derive 5 x 9 etc. 5 x 5 will be half of 5 x 10 etc… Relate to other 'tables'.  Also **Partition** an array to show how to derive an unknown fact from a known fact e.g. use knowledge of 2 and 5 times tables to work out multiples of 7, e.g. 7 x 3 = 5 x 3 + 2 x 3 15 + 6 = 21  **Scaling** Use Base 10 equipment to show 10 times bigger / smaller. Model the enlargement. E.g to show why 6 x 3 helps in solving 60 x3. *Find a ribbon that is 4 times as long as the blue ribbon r = b x 4*  **Using symbols to stand for unknown numbers to complete equations using inverse operations** ☐ x 5 = 20 3 x △ = 18 ☐ x O = 32 **Partitioning (**2 digit x 1 digit numbers) 38 x 5 = (30 x 5) + (8 x 5) = 150 + 40 = 190 **Division** Ensure that the emphasis in Y3 is on **grouping** rather than sharing, except when using fractions as this is sharing. Children will continue to use: **Number lines and known multiplication facts to solve division following on from repeated addition.** Use number lines and known multiplications to solve divisions incl. with **remainders.** Move into **chunking** (**grouping**) using these steps. Encourage children to be as efficient as possible. 23 ÷ 5 = 4 r3  **GROUPING:** 23 children are asked to get into groups of 5. How many groups do they make? **SHARING:** 23 marbles are shared between 5 people. How many marbles do they each get? Moving towards more efficient approaches, using known facts.   **Using symbols to stand for unknown numbers to complete equations using inverse operations (**2 digit ÷ 1 digit numbers) 26 ÷ 2 = ☐ 24 ÷ △ = 12 ☐ ÷ 10 = 8 **Find unit fractions of numbers and quantities** Start to relate fractions to division in context: E.g. A cake recipe for 8 people uses 500g of flour. How much flour would I need to make a cake for 4 people? What is ½ ⅓ ¼ ⅛ of 12 litres or ¼ of 20 kg ? 	lots of, groups of ×, times, multiply, multiplication, multiplied by multiple of, product once, twice, three times… ten times… times as (big, long, wide… and so on) repeated addition array row, column double, halve share, share equally one each, two each, three each... group in pairs, threes… tens equal groups of ÷, divide, division, divided by, divided into left, left over, remainder

Encourage children to check results by using the inverse, using a different method e.g. equivalent calculation and by estimation where appropriate.