Calculation Policy

ADDITION

Year 5

The Big Ideas

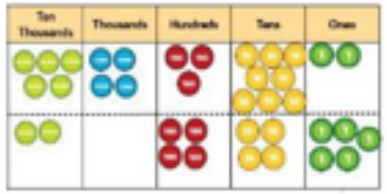
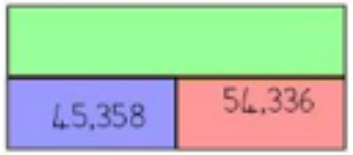
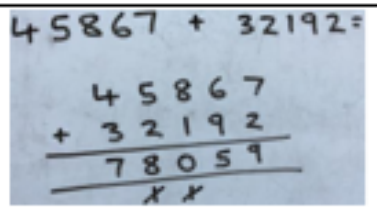
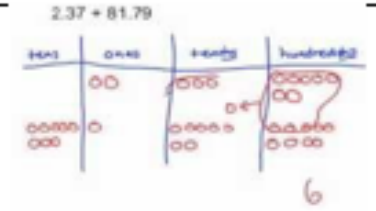
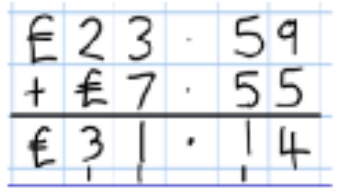
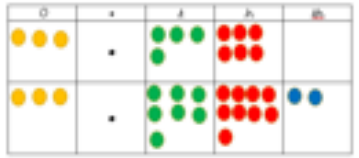
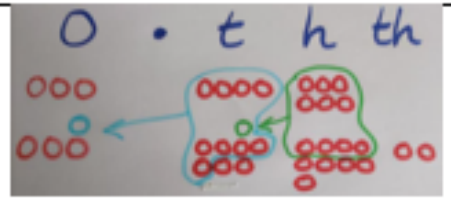
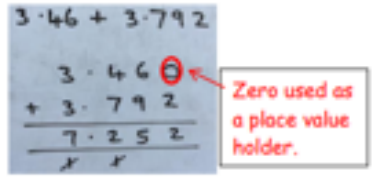
Before starting any calculation is it helpful to think about whether or not you are confident that you can do it mentally. For example, 3689 + 4998 may be done mentally, but 3689 + 4756 may require paper and pencil.

Carrying out an equivalent calculation might be easier than carrying out the given calculation. For example 3682 – 2996 is equivalent to 3686 – 3000 (constant difference).

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers (e.g. 12 462 – 2300 = 10 162)
- solve problems involving numbers up to three decimal places *(Taken from Y5 Fractions, Decimals and Percentages)*

Objective and strategy	Concrete	Pictorial	Abstract
Add numbers with more than 4 digits.	What is the total? 	Complete the bar model 	
add decimal numbers with the same number of decimal places	Continue to practice using place value grids and counters. Revisit the idea that ten tenths make one whole. Regroup when necessary 		
add decimal numbers with a different number of decimal places	3.46 + 3.792 		

Subtraction

Year 5

The Big Ideas

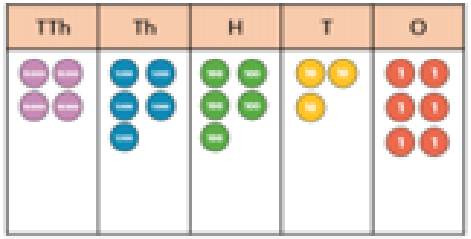
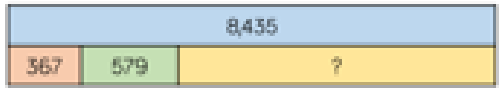
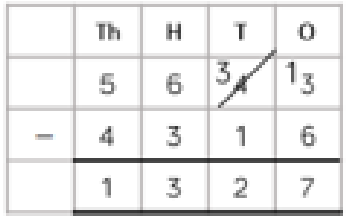
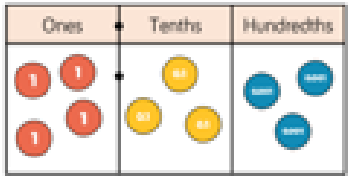
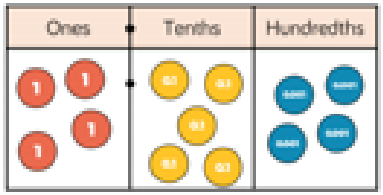
Before starting any calculation is it helpful to think about whether or not you are confident that you can do it mentally. For example, 3689 + 4998 may be done mentally, but 3689 + 4756 may require paper and pencil.

Carrying out an equivalent calculation might be easier than carrying out the given calculation. For example 3882 – 2996 is equivalent to 3886 – 3000 (constant difference).

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- add and subtract whole numbers with more than four digits, including using formal written methods (columnar addition and subtraction)
- add and subtract numbers mentally with increasingly large numbers (e.g. 12 462 – 2300 = 10 162)
- solve problems involving numbers up to three decimal places *(Taken from Y5 Fractions, Decimals and Percentages)*

Objective and strategy	Concrete	Pictorial	Abstract
subtract whole numbers with more than four digits, including using formal written methods (columnar subtraction)	45,536 – 8,426 	A shop has 8,435 magazines. 367 are sold in the morning and 579 are sold in the afternoon. How many magazines are left?  There are ___ magazines left.	5843-4316 = 
subtraction involving numbers up to three decimal places Same number of decimal places	Use the place value chart to find the to answer 4.33 – 2.14  4 . 3 3 – 2 . 1 4		Use the column method to answer these questions. 6 . 4 – 3 . 8 5 . 0 5 – 2 . 1 5
Subtraction with decimals – different number of decimals	Use the place value grid to help subtract 1.4 from 4.54  4 . 5 4 – 1 . 4	Children need to be confident in their use of place value 	4 . 5 4 – 1 . 4

Multiplication

Year 5

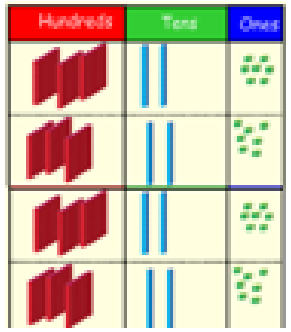
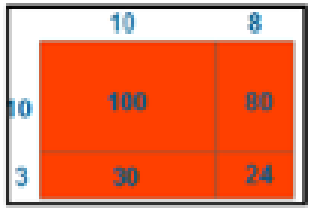
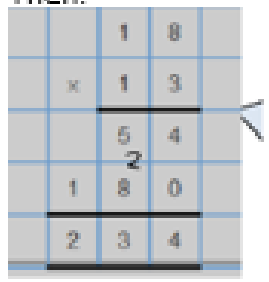
The Big Ideas

Pupils have a firm understanding of what multiplication and division mean and have a range of strategies for dealing with large numbers, including both mental and standard written methods. They see the idea of factors, multiples and prime numbers as connected and not separate ideas to learn. They recognise how to use their skills of multiplying and dividing in new problem solving situations.
Factors and multiples are connected ideas: 48 is a multiple of 6 and 6 is a factor of 48.

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- multiply numbers up to four digits by a 1 or 2-digit number using a formal written method, including long multiplication for 2-digit numbers
- multiply and divide numbers mentally drawing upon known facts
- 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 multiplication and division, including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Objective and strategy	Concrete	Pictorial	Abstract
Column multiplication for 3 and 4 digits x 1 digit, And 4 digits x 2 digits	327x4=1308  It is important at this stage that they always multiply the ones first.	**First 3 or 4Dx 1D** 327x4=1308 x 300 20 7 4 1200 80 28 **Then 2, 3 or 4Dx2D** 18x13= 	327 x 4 28 80 1200 1308 3 2 7 x 4 1 3 0 8 This will lead to a compact method. Then:  18 x 3 on the first row (8 x 3 =24, carrying the 2 for 20, then 1 x 3) 18 x 10 on the 2nd row.

Division

Year 5

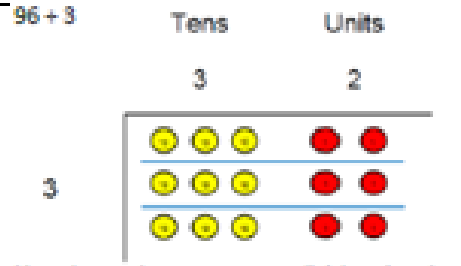
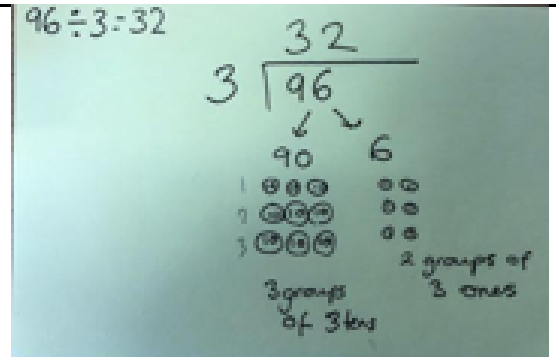
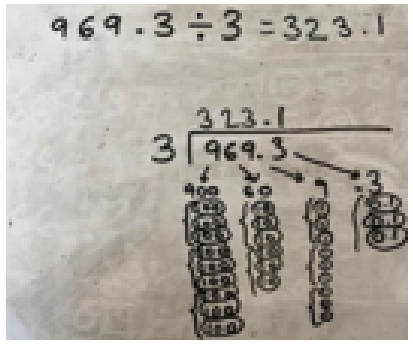
The Big Ideas

Pupils have a firm understanding of what multiplication and division mean and have a range of strategies for dealing with large numbers, including both mental and standard written methods. They see the idea of factors, multiples and prime numbers as connected and not separate ideas to learn.
They recognise how to use their skills of multiplying and dividing in new problem solving situations.
Factors and multiples are connected ideas: 48 is a multiple of 6 and 6 is a factor of 48.

Selected National Curriculum Programme of Study Statements

Pupils should be taught to:

- identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers
- multiply numbers up to four digits by a 1 or 2-digit number using a formal written method, including long multiplication for 2-digit numbers
- multiply and divide numbers mentally drawing upon known facts
- 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 multiplication and division, including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign

Objective and strategy	Concrete	Pictorial	Abstract
Use the bus stop method, including division with decimals	 Use place value counters to divide using the bus stop method alongside	 	Begin with divisions that divide equally with no remainder. 2 1 8 3 4 8 7 2 Move onto divisions with a remainder. 8 6 r 2 3 5 4 3 2