WELCOME TO YEAR 3

On the next few pages of your homework book, please find an outline of the four written methods which we will learn this year. If you need any further support or guidance, then please take a look at our class page on the website which holds links to the calculation policy and has videos modelling the methods. If you need any further support, then please do not hesitate to contact one of us.

Mrs Higginson, Mrs Hodgson and Miss Gibson

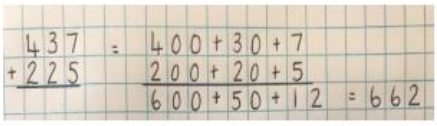
ADDITION

Year 3

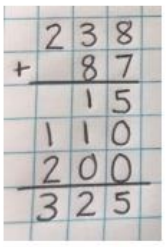
National Curriculum Objectives: Addition objectives from Addition and Subtraction Strand	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
• Add numbers mentally, including three-digit numbers and ones. • Add numbers mentally, including three-digit numbers and tens. • Add numbers mentally, including three-digit numbers and hundreds. • Add numbers with up to 3 digits, using formal written method of columnar addition. • 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.	• Find 10 or 100 more than a given number. • Recognise the place value of each digit in a three-digit number. • Identify, represent and estimate numbers using different representations. • Read and write numbers up to 1000 in numerals in words. • Compare and order numbers up to 1000.	*KS1 Vocab plus:* Combined, more, column, carrying, expanded, compact

Steps for Written Methods:

Step 1: To apply expanded column methods from Y2 when adding three-digit numbers. This may be new teaching for the children, depending on whether they were ready for this in Year 2. Therefore, they may need to track back.



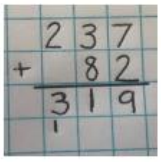
Step 2: Introduce the expanded column method.



Add the ones column first, in preparation for the compact method.

Step 2 and Step 3 can be taught alongside each other to ensure the children understand the value of the numbers they are adding in the compact method.

Step 3: Move to the compact column addition, first without carrying and then with.



Add the ones first.

Carry numbers underneath the bottom line.

Ensure correct use of vocabulary throughout. E.g. we are adding 3 tens and 7 tens (30 and 70) to make 10 tens or 100, as opposed to 3 and 7 equals 10.

SUBTRACTION

Year 3

National Curriculum Objectives: Subtraction objectives from Addition and Subtraction Strand	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
• Subtract numbers mentally, including three-digit numbers and ones. • Subtract numbers mentally, including three-digit numbers and tens. • Subtract numbers mentally, including three-digit numbers and hundreds. • Subtract numbers with up to 3 digits, using formal written method of columnar 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 subtraction.	• Find 10 or 100 more than a given number. • Recognise the place value of each digit in a three-digit number. • Identify, represent and estimate numbers using different representations. • Read and write numbers up to 1000 in numerals in words. • Compare and order numbers up to 1000.	*KS1 Vocab plus:* Fewer, less, reduce, how many less? How many remain? Exchange, decrease, value, digit, hundreds

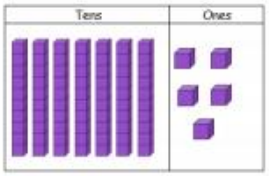
Written Methods:

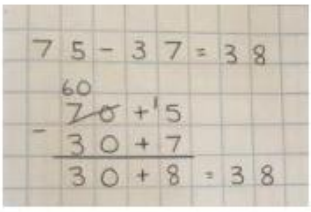
Step 1:

Introduce this method with examples where no exchanging is required. Use this as an opportunity to reinforce place value and check children's understanding before moving on.

Step 2:

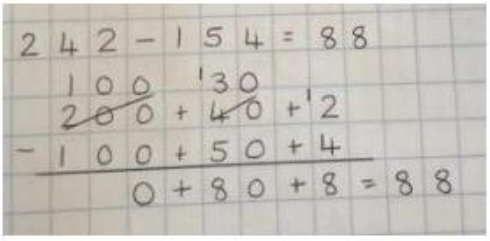
Introduce exchanging through practical subtraction. Make the larger number with dienes and then physically exchange a row of 10 for ten ones. Model how to record this.





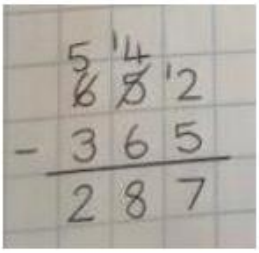
Step 3:

Once the children are secure with the 'exchanging' method, they can use this to subtract two and three-digit numbers in a variety of contexts.



Step 4:

If children are ready, and have a secure understanding of the maths involved, they may use compact column subtraction for three-digit numbers. However, children must not be moved onto this stage too soon.



MULTIPLICATION

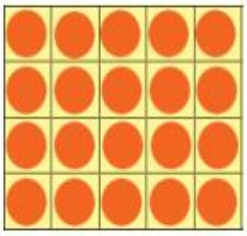
Year 3

National Curriculum Objectives: Multiplication objectives from Multiplication and Division Strand	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
• Recall and use multiplication and division facts for the 3,4 and 8 times tables. • Write and calculate multiplication using the multiplication tables they know, including for two-digit numbers times one-digit numbers, suing mental methods and progressing to formal written methods. • Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and corresponding problems in which n objects are connected to m objects.	• Count from 0 in multiples of 4 and 8.	*All previous vocabulary, plus:* Product, multiple

Written Methods for multiplying a two-digit number by a one-digit number.

Step 1: Arrays

Reinforce Year 2 work on arrays, ensuring children have a secure understanding and can apply these to calculate facts for the 3, 4 and 8 times tables.



4 + 4 + 4 + 4 + 4 = 20

5 + 5 + 5 + 5 = 20

4 x 5 = 20

5 x 4 = 20

Step 2: Introducing the grid method using arrays

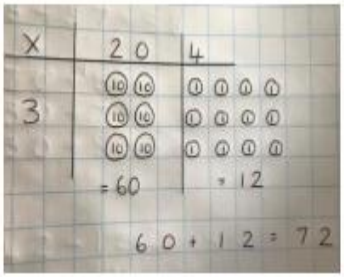
Introduce the grid method to the children by making the arrays to represent the multiplication statement. E.g. "We need 4 rows of 10 and 4 rows of 3".

Then move onto using dienes, as a progression towards a more compact method.

Children can then represent the work they have done with the practical resources, in a way in which they understand, after modelling by the teacher.

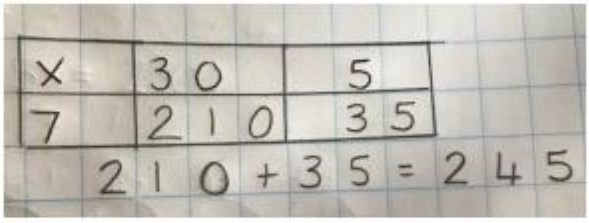
x	10	3
4	○○○○○○○○○○ ○○○○○○○○○○ ○○○○○○○○○○ ○○○○○○○○○○	○○○ ○○○ ○○○ ○○○

x	Tens	Ones
		



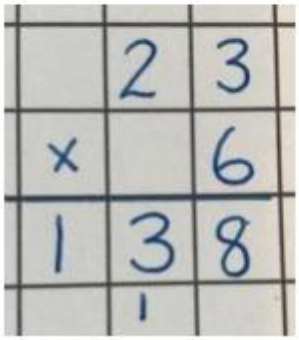
Step 3: Grid method

Once the children have a secure understanding of the above steps, the grid method can be introduced, alongside a pictorial representation to start with, then the children practise and use this in a variety of different contexts.



Step 4: Short multiplication

For those children who show a secure understanding of the previous steps and can use these in a variety of contexts, they may be shown how to record this as a short multiplication method. This should be done alongside the grid method so that children are clear on the link between the two.



DIVISION

Year 3

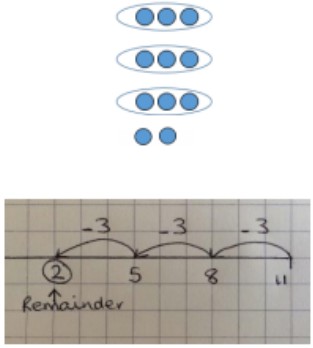
National Curriculum Objectives: Division objectives from Multiplication and Division Strand	Key Skills/ other linked NC Objectives (Place Value)	Key Vocabulary
• Recall the division facts for the 3, 4 and 8 times tables. • Write and calculate division statements using the multiplication tables they know. • Solve problems, including missing number problems, involving division.	• Count in multiples of 4, 8, 50 and 100.	*Previous vocabulary, plus:* *Inverse, short division, carry, remainder, multiple*

Written Methods:

Step 1: Developing understanding of grouping, using a number line and introducing remainders.

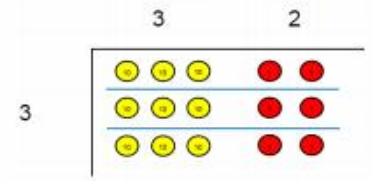
Children explore, through the continued use of practical equipment, pictures and number lines, the concept of remainders, how many are left etc. This is preparation for carry remainders across within short division.

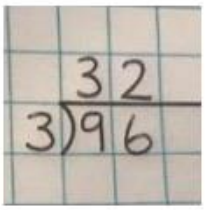
Children also continue to develop their understanding of using grouping on a number line to divide, and also to find remainders.



Step 2: Introducing short division (no remainders and no numbers carried)

Once children are secure with division as grouping and sharing, using number lines, arrays etc. short division for larger two-digit numbers can be introduced. To start with, this should be introduced with numbers that have no remainders within, or at the end of the calculation.





Step 3: Short division, with no remainders in the final answer

Once children have shown a secure understanding of the above 2 steps, they should be taught how to use short division when remainders occur within the calculation and be shown how to carry the remainder onto the next digit.