Barnfields Primary School
'Believe & Achieve'

Barnfields Primary School
Calculation Policy

Year 4

Addition Calculation: Year 4

Mental Calculation

- Practice mental methods with increasingly large numbers.
- Consolidate partitioning and re-partitioning
- Use compensating for adding too much/little and adjusting

Common mental calculation strategies:
Partitioning and recombining
Doubles and near doubles
Use number pairs to 10 and 100
Adding near multiples of ten and adjusting
Using patterns of similar calculations
Using known number facts
Bridging though ten, hundred
Complementary addition

I know that 63 +29 is the same as 63 + 30 - 1

Written Calculation

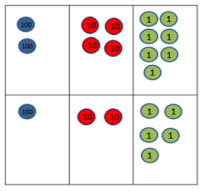
- **Add numbers with up to 4 digits using the formal written methods of columnar addition where appropriate**
- Include decimal addition for money.

Revert to expanded methods if the children find formal columnar method difficult.

Possible Concrete and Visual Representations	Teacher Modelling/Children's Recordings

Children apply, develop and secure their understanding of columnar addition which has been taught in year 3. The aim is for the children to be using the compact column method of recording by the end of year 4.

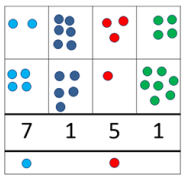
Written methods (progressing to 4-digits)
Expanded column addition modelled with place value counters, progressing to calculations with 4-digit numbers.



200 + 40 + 7
100 + 20 + 5
300 + 60 +12 = 372

247
+125
12
60
300
372

Compact written method
Extend to numbers with at least four digits.



2634
+4517
7151

Children should be able to make the choice of reverting to expanded methods if experiencing any difficulty.

Extend to up to two places of decimals (same number of decimals places) and adding several numbers (with different numbers of digits).

72.8
+ 54.6
127.4
1 1

Fluency

- Perform mental calculations with increasingly large numbers to aid fluency
- Find 1000 more than a number
- Count in 6s, 7s, 9s, 25s and 100s

Subtraction Calculation: Year 4	
Mental Calculation	• **Continue to practise mental methods with increasingly large numbers to aid fluency** • Methods to support fluent calculation and encourage efficiency of method: ➢ Find a small difference by counting up e.g. 5003—4996 ➢ Subtract nearest multiple of ten and adjust. ➢ Partition larger numbers *Whenever possible, children should be encouraged to visualise number lines and other basic, supporting representations to promote fluent work without jottings.*
Written Calculation	• **Subtract numbers with up to 4 digits using the formal written methods of columnar subtraction where appropriate.** • Build on formal, extended method (See Year 3) using exchange wherever necessary. • Continue to use representations and manipulatives to develop understanding of place value.
Possible Concrete and Visual Representations	**Teacher Modelling/Children's Recordings**
The children build upon their learning in year 3 by continuing to practice columnar subtraction with increasingly larger numbers. (see year 3 subtraction methods)	
Fluency	♦ Count back in 6, 7, 9, 25 and 1000 ♦ Count back through zero to include negative numbers ♦ Find 1000 less than a number ♦ Continue to practise mental calculations with increasingly large numbers to aid fluency

Multiplication Calculation: Year 4	
Mental Calculation	• **Recall multiplication and division facts for multiplication tables up to 12 × 12** • **Use place value, known and derived facts to multiply and divide mentally, including:** ➢ **multiplying by 0 and 1;** ➢ **dividing by 1;** ➢ **multiplying together three numbers** • **Recognise and use factor pairs and commutativity in mental calculations** • Practise mental methods and extend this to three□digit numbers to derive facts, (for example 600 ÷ 3 = 200 can be derived from 2 x 3 = 6)
Written Calculation	♦ **Multiply two-digit and three-digit numbers by a one-digit number** ♦ **using formal written layout** ♦ Estimate before calculating ♦ Ensure written methods build on/relate to mental methods (e.g. grid method) ♦ Introduce alongside grid and expanded column methods *<u>Key skills to support:</u>* ❖ *know or quickly recall multiplication facts up to 12 × 12* ❖ *understand the effect of multiplying numbers by 10, 100 or 1000* ❖ *multiply multiples of 10, for example, 20 × 40;*

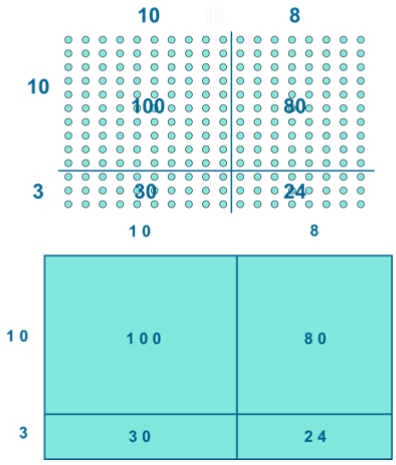
	❖ *approximate, e.g. recognise that 72 × 38 is approximately 70 × 40 = 2800 and use this information to check whether their answer appears sensible*

Possible Concrete and Visual Representations	Teacher Modelling/Children's Recordings

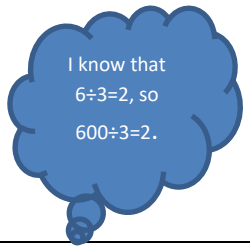
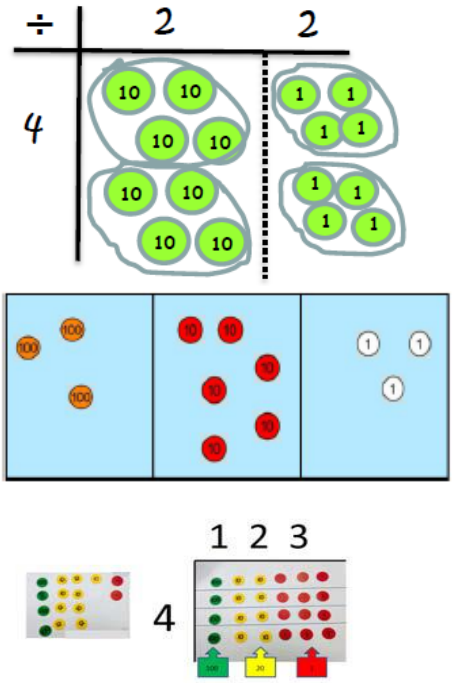
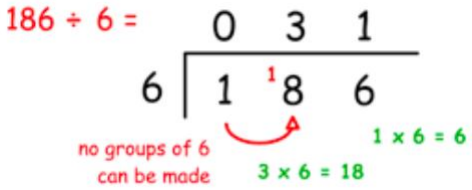
The children build upon their learning in year 3 by continuing to practice columnar multiplication with increasingly larger numbers. (see year 3 multiplication methods)

Written methods (progressing to 3d x 2d)

Children to embed and deepen their understanding of the grid method to multiply up 2d x 2d. Ensure this is still linked back to their understanding of arrays and place value counters.



Fluency	
	♦ Count in multiples of 6, 7, 9, 25 and 1000 ♦ Recall and use multiplication facts up to 12 x 12 with increasing fluency ♦ Derive multiplication facts with up to three-digits ♦ Recognise and use factor pairs and commutativity in mental calculations ♦ Use the distributive law ♦ Combine knowledge of number facts and rules of arithmetic to solve mental and written calculations e.g. 2 x 6 x 5 = 10 x 6

<table>
<tr><th colspan="3">Division Calculation: Year 4</th></tr>
<tr><td>Mental Calculation
 
</td><td colspan="2">Pupils should be taught to:
Recall multiplication and division facts for multiplication tables up to 12 × 12
Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers
Recognise and use factor pairs and commutatively in mental calculations.
❖ Pupils practise mental methods and extend this to three-digit numbers to derive facts</td></tr>
<tr><td>Written Calculation</td><td colspan="2">Pupils should be taught to:
multiply two-digit and three-digit numbers by a one-digit number using formal written layout
solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.</td></tr>
<tr><td colspan="2">Possible Concrete and Visual Representations</td><td>Teacher Modelling/Children's Recordings</td></tr>
<tr><td colspan="2"> 
</td><td>Progressing the method from year 3…
 
</td></tr>
<tr><td>Fluency</td><td colspan="2">Continue to practise recalling division facts for multiplication tables up to 12 x 12
Practise mental methods and extend this to three-digit numbers for example 200 x 3 = 600 into 600 ÷ 3 = 200
Use place value, known and derived facts to divide mentally, including dividing by 1
Recognise and use factor pairs and commutatively in mental calculations</td></tr>
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