Drake Primary School and Little Pirates

Calculation Policy

When calculating, pupils must not simply rote learn procedures but demonstrate their understanding of these procedures through the use of concrete materials and pictorial representations. This document outlines the different written calculation strategies that should be taught and used in Years 1 to 6. The policy is not for EYFS/Reception since the focus should be on the understanding of early number concepts and number sense through the use of concrete manipulatives

This policy should be used alongside the *Key Representations Policy*

Aims:

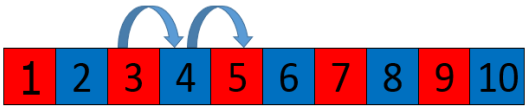
- To ensure consistency in layout and teaching across Drake Primary School and allow children to build on previous learning.
- Each of the 4 operations to build on a solid understanding of place value, number sense and the connections between the four operations.
- Children to use the correct mathematical language and terminology and be able to talk through their calculations verbally.
- Children will be taught to use the most appropriate and efficient method for a particular calculation, always considering mental methods and using known facts before attempting any written calculation.
- As new methods are taught, children should have the chance to make connections between methods and establish the similarities and differences between them.

Vocabulary

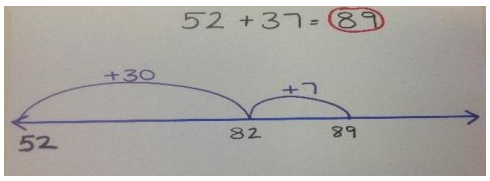
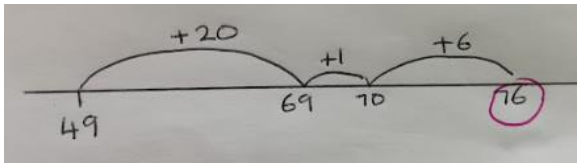
Calculation	Vocabulary
All Calculations	**equal, equation, balance, inverse, digit, place value, ones, tens, hundreds, thousands, column, estimate, known facts, odd, even, partition, position, quantity, represent, symbol, calculate, efficient, relationship, numeral, place holder, round, expression, integer, positive numbers, negative numbers, prime number, brackets, order of operations, formula**
Addition +	**add, total, sum, altogether, more, more than, plus, increase, how many more, number bond, commutative, associative law**
Subtraction -	**subtract, difference, take away, fewer, less, minus, leave, decrease**
Multiplication x	**multiply, times, repeated addition, array, commutative, multiple, factors, double, lots of, product, square numbers (^{2}), cubed numbers (^{3}), multiplier, multiplicand, associative law**
Division ÷	**divide, group, half, share, repeated subtraction, multiple, factors, dividend, divisor, quotient, divisible, remainder**

Addition

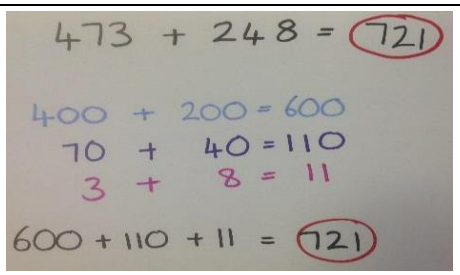
Number Tracks

Example equation	Method
3 + 2 = 5	

Number lines

Example equation	Method
52 + 37 = 89 (no crossing of 10s)	
49 + 27 = 76 (crossing a 10)	

Partitioning

Example equation	Method
473 + 248 = 721	

Compensation/constant difference

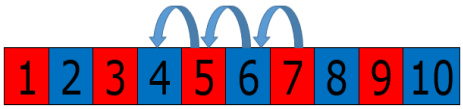
Example equation	Method
138 + 59 = 197	138 + 59 could be changed to 137 + 60

Column method (Y6 only)

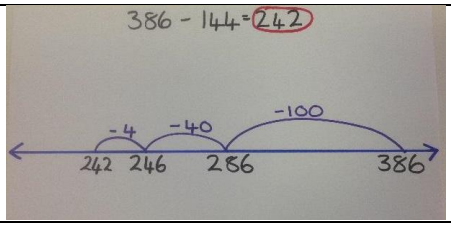
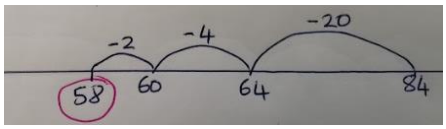
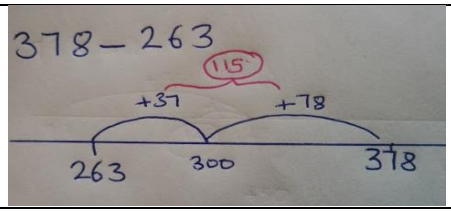
Example equation	Method
21,848 + 1,523 = 23,371	21848 + 1523 23371

Subtraction

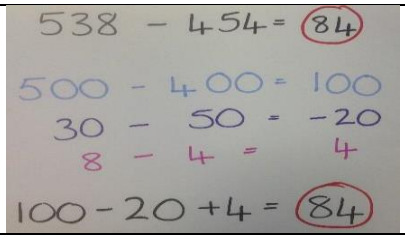
Number Tracks

Example equation	Method
7 – 3 = 4	

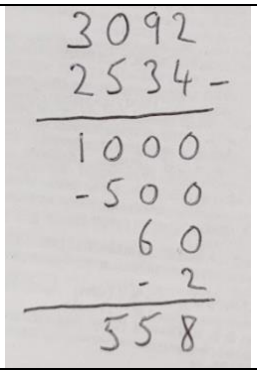
Number lines

Example equation	Method
386 – 144 = 242 (no crossing of 10s)	
84 – 26 = 58 (crossing a 10)	
378 – 263 = 115 (counting on/finding the difference)	

Partitioning

Example equation	Method
538 – 454 = 84	
538 – 454 = 84	538 – 400 = 138 138 – 50 = 88 88 – 4 = 84

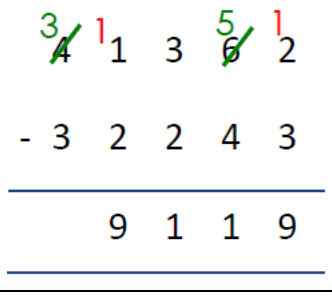
Negative subtraction

Example equation	Method
3,092 – 2,534 = 558	

Compensation/constant difference

Example equation	Method
119 – 89 = 30	119 – 89 could be changed to 120 - 90

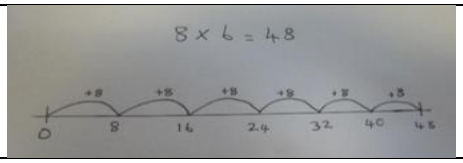
Column method (Y6 only)

Example equation	Method
41,362 – 32,243 = 9,119	

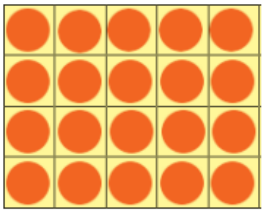
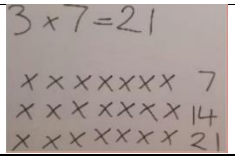
Multiplication

See '[teaching multiplication bonds at Drake]'

Number lines (repeated addition)

Example equation	Method
8 x 6 = 48	

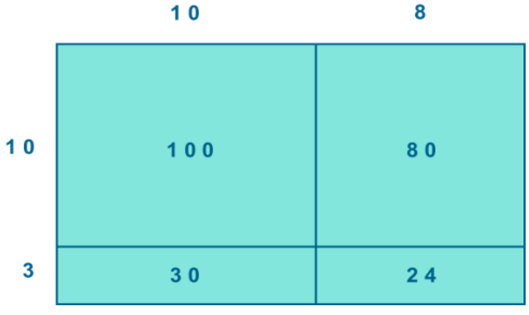
Arrays

Example equation	Method
5 x 4 = 20	
3 x 7 = 21	

Using factors and multiples

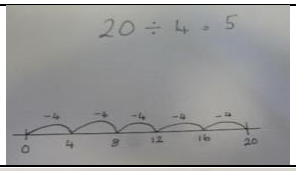
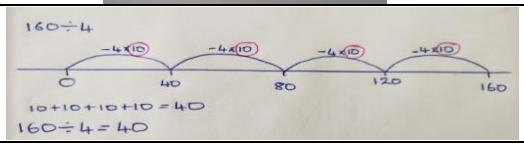
Example equation	Method
30 x 70 = 2,100	3 x 7 = 21 30 x 70 = 2,100
18 x 20 = 360	9 x 2 = 18 9 x 20 = 180 18 x 20 = 360

Grid method/area model

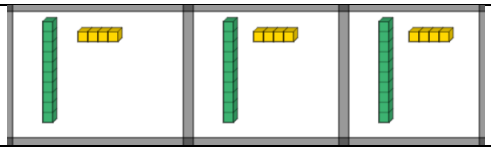
Example equation	Method
18 x 13 = 234	

Division

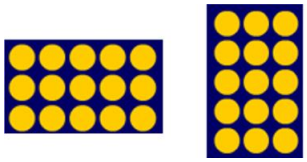
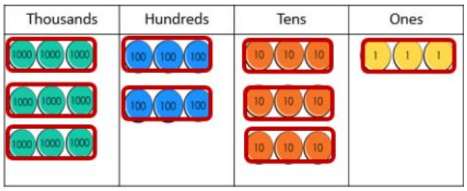
Number line

Example equation	Method
20 ÷ 4 = 5	
160 ÷ 4 = 40	

Sharing

Example equation	Method
14 ÷ 4 = 3 r2	
42 ÷ 3 = 14	

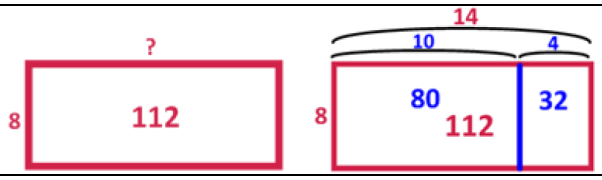
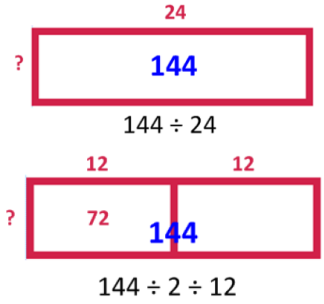
Grouping

Example equation	Method
15 ÷ 3 = 5 (There are 5 groups of 3) 15 ÷ 5 = 3 (There are 3 groups of 5)	
9,693 ÷ 3 = 3,231	

Using factors and multiples

Example equation	Method
600 ÷ 3 = 200	6 ÷ 3 = 2 600 ÷ 3 = 200

Area model

Example equation	Method
112 ÷ 8 = 14	
144 ÷ 24 = 6	

Short Division (Y6 only)

Example equation	Method
8,528 ÷ 4 = 2,132