Covingham Park Primary School
Progression in Calculations Policy

Our vision is to provide every child with an outstanding start to their education, which equips them with the necessary skills to meet future changes and challenges throughout their life.

Date Written: September 2017
Reviewed: October 2018; November 2019; November 2021; November 2023
Author: Amber Jayne Gunning (Maths Leader)
Review Date: Autumn 2025

Our aim is to provide children with accurate, efficient and appropriate methods for calculating; this policy outlines the progression in the 4 operations of addition, subtraction, multiplication and division. This policy should be used in conjunction with the National Curriculum for Maths and Covingham Park Maths Curriculum.

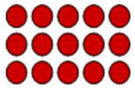
This policy should be used as a guide to progression and expectations. Some children will progress more quickly; others may need more time to consolidate a particular stage or stages.

If children have their own methods for calculating which are accurate, efficient and appropriate; these should be recognised and continued.

Calculation Policy: End of year expectations for each year group

		FS2	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Number facts		Vocabulary, counting up and down, identifying and number recognition, ordering, one more and one less, Secure in recalling and identifying numbers to 20 Doubling	Number facts to 20 Counting on and back from any number up to 100	x 2, x 5, x 10 tables Counting on and back in 2's, 3's, 5's and 10's Odd/even Use known number facts e.g. 3 + 10 to calculate 30 + 70	x 3, x 4, x 8 tables Doubling and halving	x 6, x 7, x 9, 11, 12 Recall multiplication and inverse division facts for tables up to 12 x 12 Counting on and back through 0 including negative numbers	Prime numbers to 100 Multiples, factors and prime factors Consolidate multiplication and inverse division facts for tables up to 12 x 12 count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000	Common factors and multiples Squares and cubes
Addition and subtraction	Mental	Add and subtract single digit numbers using equipment.	Secure in adding and subtracting one and two digit numbers to 20. E.g. 9 + 8; 17 – 8 9 + □ = 15 Use of practical equipment to support mental calculations: number lines, Numicon, 100 squares, bead strings, counters, , Dienes etc.	Use of practical equipment to support mental calculations: number lines, 100 squares, bead strings, Dienes etc. Consolidate addition and subtraction facts to 20. Commutativity e.g 5 + 2 + 1 = 1 + 5 + 2 = 1 + 2 + 5 etc	Add and subtract 3 digit number and 1 digit, 10s, 100s: 432 +/- 7 432 +/- 20 432 +/- 100 Mentally (with jottings) e.g. 46 + 78 10/100 more or less from any given number up to 1,000 Use of number lines to calculate time – duration	Continue to practise from Year 3 10/100/1000 more or less from any given number up to 10,000 Use of number lines to calculate time - duration	Add and subtract large numbers mentally e.g.: 12 462 – 2300 Use of number lines to calculate time - duration	Continue to add and subtract large numbers mentally Use of number lines to calculate time – duration and negative and positive integers

	Written			**ADDITION** 43 + 36 40 + 3 30 + 6 40 + 30 = 70 3 + 6 = 9 79 40 + 3 +30 + 6 70 + 9 79 **SUBTRACTION** 46 – 32 46 – 2 = 44 44 – 30 = 14 46 – 39 46 – 9 = 37 37 – 30 = 7 N.B. Always start with ones to embed understanding when using formal written method in later years	**ADDITION** 245 + 496 200 +40 + 5 +400 + 90 + 6 700 + 40 + 1 100 10 245 Begin with +496 no crossing 741 boundaries, 11 extend to crossing 10s **SUBTRACTION** 723 – 458 = 265 500 110 ~~700~~ 20 13 - 400 50 8 200 60 5 Extend to: 6 13 11 7 ~~4~~ ~~1~~ – 3 6 7 3 7 4	**ADDITION** 2734 +3496 6230 111 **SUBTRACTION** Extend on compact method from Y3 extending to 4 digits + 1 10 13 7 ~~2~~ ~~1~~ ~~3~~ -1 1 49 6 0 6 4 N.B. A small minority may begin the year using expanded method. Need to be proficient in compact method by the end of the year.	**ADDITION AND SUBTRACTION** Add and subtract numbers with more than 4 digits, including decimals using the compact method.	**ADDITION AND SUBTRACTION** Continue to add and subtract numbers with more than 4 digits, including decimals using the compact method.
Multiplication and division	Mental	Counting in 2s and 10s Sharing	Counting in 2s, 5s and 10s	Multiplication in any order: 2 x 5 = 10 5 x 2 = 10 Arrays, repeated addition number lines used to support learning And the division inverse 10 ÷ 2 = 5 etc	Using known number facts, e.g, If 3 x 2 = 6, 30 x 2 = 60 If 6 ÷ 2 = 3 60 ÷ 2 = 30 24 x 3 20 x 3 = 60 4 x 3 = 12 60 + 12 = 72	Using known number facts to multiply multiples of ten and use the inverse to divide, e.g, 200 x 3 = 600 600 ÷ 3 = 200 Use factor pairs and commutativity, multiplying 3 single digit numbers e.g: 3 x 15 = 3 x 3 x 5 = 9 x 5 = 45	x and ÷ by 10, 100, 1000 short division beyond times tables with remainders	Mixed operations with large numbers.

	Written		**MULTIPLICATION AND DIVISION** One step problems involving multiplication and division. Concrete objects, pictorial representations and arrays with the support of the teacher	**MULTIPLICATION** Arrays 3 x 5; 5 x 3  Number tracks / Number line (modelled using bead strings, counting sticks etc) Repeated addition Partitioning: 12 x 5 10 + 2 10 x 5 = 50 2 x 5 = 10 50 + 10 = 60 **DIVISION** Sharing using hoops, pictorial representation, arrays, number lines – repeated subtraction, inverse of x, grouping using objects/resources Using known multiplication facts (inverse)	**MULTIPLICATION** Grid 	x	70	4
---	---	---
6	420	24	 420 + 24 444 **DIVISION** Number line to model and calculate through repeated subtraction. 21 r2 4 / 86 – 40 (x 10) 46 – 40 (x 10) 6 – 4 x (1) 2	**MULTIPLICATION** 274 x 6 Begin with grid, extend to expanded method then to compact 	x	200	70	4
---	---	---	---
6	1200	420	24	 1200 420 + 24 1644 274 X 6 24 (4 x 6) 420 (70 x 6) 1200 (200 x 6) 1644 274 Begin with x 6 2 x 1 digit 1644 extend to 42 3 x 1 digit **DIVISION** 346 ÷ 8 Begin with 2 digit ÷1 digit then extend to 3 digit ÷1: 43 r2 8/346 - 80 (x 10) 266 - 80 (x 10) 186 - 80 (x 10) 106 - 80 (x 10) 26 - 24 (x 3) 2 Moving to: 43 r2 8/346 - 320 (x40) 26 - 24 (x3) 2	**MULTIPLICATION** Multiply 4 digit by 1 digit number and 2 digit by 2 digit using compact method: 2543 X 6 15258 3 2 1 87 X 24 348 1740 2088 Grid for decimals **DIVISION** Chunking for 3 digit ÷ 2 digits 242 ÷ 16 15 r 2 16/242 160 (10x) 82 80 (5x) 2 Short method for 4 digit ÷ 1 digit 0432 r 6 8/3426 2	**MULTIPLICATION** Multiply 4 digit by 2 digit compact method, as in year 5, including decimals. 43.6 x 2.85 43.60 X 2.85 21 8300 3428 800 8712 000 124.21 600 **DIVISION** Long division expressing remainders as fractions and decimals 432 ÷ 15 becomes 28 15 / 432 300 132 120 12 $\frac{12}{15} = \frac{4}{5}$ Answer: $28\frac{4}{5}$ 432 ÷ 15 becomes 28.8 15 / 432.0 300 132 120 120 120 0 Short method for division with any divisor. If the divisor is over 12, children would still be expected to write out their multiples as in long division.

- For addition and subtraction – columns headed with 100 10 1
- "Carried" digits are to **always** be carried **under** the calculation
- Refer to models and images charts for resources/images to support understanding
- For clarification on methods/progression/expectations – please see maths leader