

Boringdon Primary School

Progression in Number Facts

'Calculate not count'

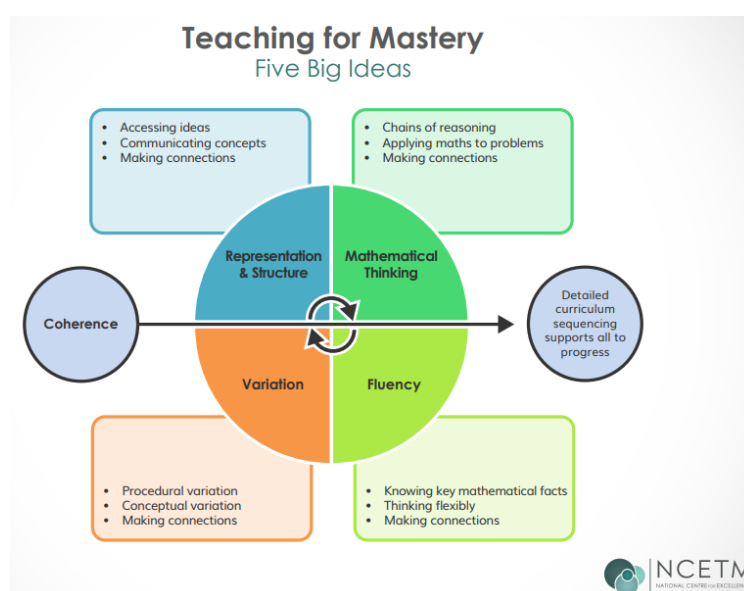
This document has been created to ensure consistency and progression in the school's approach to teaching mathematical fluency, enabling children to develop their understanding of additive and multiplicative facts in order that our pupils recall and apply knowledge rapidly and accurately to aid with wider maths learning.

Intent:

Fluency Involves

- quick recall of facts and procedures
- the flexibility and fluidity to move between different contexts and representations of mathematics
- the ability to recognise relationships/structures and make connections in mathematics

Fluency is one of the 'Five Big Ideas'. These are principles drawn from research evidence that underpin a 'Teaching for Mastery' approach. Fluency goes hand-in hand with the other ideas that lie at the heart of maths mastery pedagogy. A child who is fluent in key maths facts has the ability to quickly and efficiently recall facts and procedures and has the flexibility to move between different contexts and representations of mathematics.



Implementation:

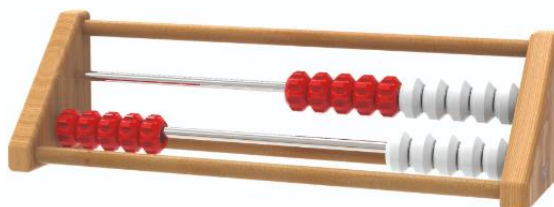
Early Years and KS1 - Mastering Number

Mastering number is a project run by the NCETM for Foundation, Year 1 and Year 2 children. It aims to secure firm foundations in the development of good number sense for all children from Reception through to Year 1 and Year 2. All children will leave KS1 with fluency in calculation and a confidence and flexibility with number. Attention will be

given to key knowledge and understanding needed in Reception classes, and progression through KS1 to support success in the future.

In Foundation, Mastering Number has a daily taught session followed by activities in the continuous provision. It is number focussed and moves slowly so that children develop a sound understanding of each step before moving on.

In Year 1 and 2, it is a 10-15 minute daily session. These are extra maths sessions that focus on the children's ability to manipulate numbers and use them in a variety of contexts and problems. In these sessions, children use a range of concrete apparatus and pictorial representations. Each child has their own rekenrek to use in the sessions.

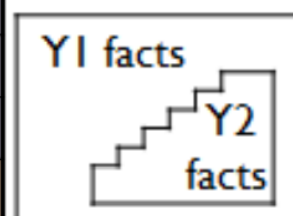


The sessions also use the characters and clips from the Cbeebies show Numberblocks.



Children need to be fluent in the following facts:

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10



Pupils must be fluent in all of these facts by the end of year 2, and should continue with regular practice through

year 3 to secure and maintain fluency. It is essential that pupils have automatic recall of these facts before they learn the formal written methods of columnar addition and subtraction.

KS2 – Multiplication and Division Facts

Times tables need to be explicitly taught to allow children to make connections between different concepts and support them with fluency when solving increasingly challenging mathematical problems. At Boringdon, we teach times tables during lessons in Year 2, Year 3 and Year 4, alongside national curriculum objectives. Teachers expose connections between different multiples to support children's deep understanding. Times table knowledge should build up incrementally throughout Years 2, 3 and 4 and then be consolidated throughout Year 5 and 6 to allow children to apply their knowledge fluently. Children should be able to recall the tables in any order and complete missing number facts for multiplication and related division facts. In Y4, the planned sequence of tables has been supported by Colin Foster's research which support the children building on facts that already know. We use a variety of methods to help children to learn and remember their times tables including oral rehearsing, games, Times Table Rockstars and written practice.

Year 2

	Tables to be taught	Connections to expose
Spring 2	Teach multiples of 10. Children need to be fluent in counting in 10s forwards and backwards from any given multiple.	All multiples of 10 end in a zero.
Summer 1	Consolidate recall of 10s. Teach multiples of 2. Children need to be fluent in counting in 2s forwards and backwards from any given multiple.	10 x table always have 0 in the ones. 2 x table is double 1s, all even numbers, even numbers can be halved equally.
Summer 2	Consolidate recall of 10s and 2s. Teach multiples of 5. Children need to be fluent in counting in 5s forwards and backwards from any given multiple.	2 x table is double 1s, all even numbers, even numbers can be halved equally. 10 x table is double 5s (5s are half 10s), 10 x table always have 0 in the ones, 5xtable always have 5 or 0 in the ones. If it is divisible by 10 it is also divisible by 5.
All children should be fluent in 10, 2 and 5 times tables by the end of Year 2.		

Year 3

	Tables to be taught	Connections to expose
Autumn 1	Consolidate recall of 2s, 5s and 10s.	2 x table is double 1s, all even numbers, even numbers can be halved equally. 5xtable always have 5 or 0 in the ones. If it is divisible by 10 it is also divisible by 5.
Autumn 2	Teach multiples of 3. Children need to be fluent in counting in 3s forwards and backwards from any given multiple.	Highlight patterns of odd and even multiples. Discuss doubling multiples e.g. $2 \times 3 = 6$ so $4 \times 3 = 12$.
Spring 1	Consolidate recall of 3s. Teach multiples of 4. Children need to be fluent in counting in 4s forwards and backwards from any given multiple.	See above 4s are double 2s. To divide by 4, halve and halve again – link to quarters.
Spring 2	Recall and consolidate 3s and 4s. Teach multiples of 8. Children need to be fluent in counting in 8s forwards and backwards from any given multiple.	8s are double 4s. 2s are double 4s, so 2s doubled and doubled again = 8s.
Summer 1	Recall and consolidate 6s	See above
Summer 2	Comprehensive assessment of 10, 2, 5, 3, 4, 8 times tables and recall and consolidation of those that children are finding difficult.	
All children should be fluent in 10, 2, 5, 3, 4 and 8 times tables by the end of Year 3.		

Year 4

	Tables to be taught	Connections to expose
Autumn 1	Consolidate recall of 2s and 5s time tables. Focus on square numbers	
Autumn 2	Teach the children the Squared numbers. Use doubling as a focus to teach new number facts from the 2s, 4s, 8s and 6s. Teach multiples of 11.	A number multiplied by itself is a square number. 7×2 can be double to find 7×4 3×3 can be doubled to find 6×3
Spring 1	Teach multiples of 11. Teach multiples of 9. Children need to be fluent in counting in 9s forwards and backwards from any given multiples Learn the facts 3×4 , 3×7 , 4×7	One more than 10 groups. Doubling of known facts 2×11 to find 4×11 . 3×11 to find 6×11 . Look at patterns in the $11 \times$ table, and the trickier ones to learn - $\times 11$ and $\times 12$. $\times 9$ 'tricks' - putting finger down of the multiple you are finding - tens on the left, ones on the right. This works as the digits in multiples of 9 add up to 9 e.g. $18 = 1+8 = 9$. Triple the $3 \times$ table.
Spring 2	Use doubling as a focus to teach new number facts from that are already known. Teach remaining multiples of 12.	Use doubling to find facts of times tables already known. e.g 8×3 and 12×3 (doubled from 4×3 and 6×4)
Summer 1	Comprehensive assessment of all multiples and recall and consolidation of those that children are finding difficult - likely to be $\times 6$, 7 and 12 .	Expose links as necessary. Regular assessment in the lead up to the MTC in June.
Summer 2	Comprehensive assessment of all multiples and recall and consolidation of those that children are finding difficult - likely to be $\times 6$, 7 and 12 .	Expose links as necessary. Regular assessment in the lead up to the MTC in June.
All children should be fluent in tables up to $\times 12$ by the end of Year 4.		

Year 5 and 6

Daily practice of times tables knowledge as part of planned retrieval. This should include division facts and missing number questions. Regular assessment identifies gaps for individuals as well as the cohort, and interventions as whole class or as individuals are planned for.

Impact:

Quick and accurate recall of times table facts support children when working on a variety of problems, including multiplication, division and fractions. This quick, automatic recall reduces cognitive load, allowing children to focus on the process of problem solving rather than mental calculations.