Woodford Primary School

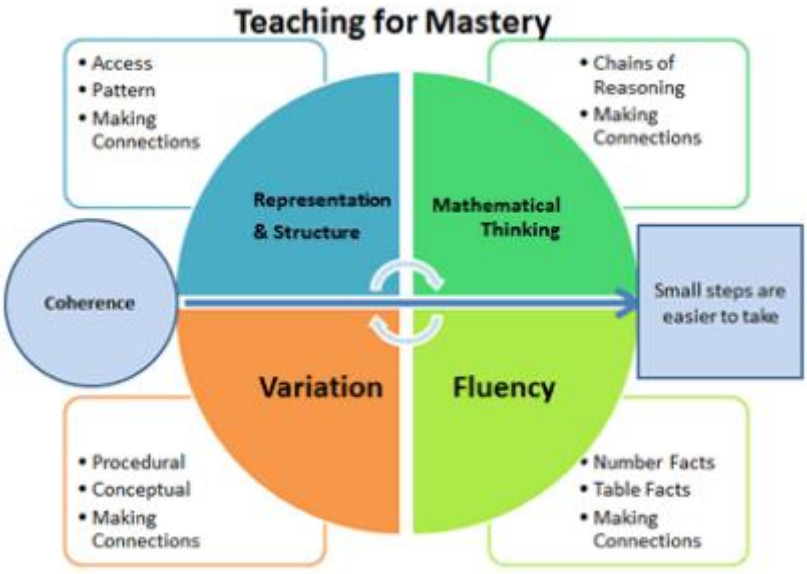
Mathematical Fluency Policy

This policy 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 Reception, 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 Reception, 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.

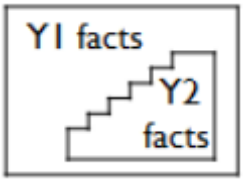
In Year 1 and 2, it is a 10-15 minute daily session. These are extra maths sessions that focus on the children's ability to manipulate numbers and use them in a variety of contexts and problems.

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 Woodford, we teach times tables during lessons in Year2, 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. We use a variety of methods to help children to learn and remember their times tables including oral rehearsing and games and written practice.

- All children in Early Years and KS1 will be have one Mastering Number session per day. In Years 1 and 2, this is in addition to the Maths curriculum.
- From Spring Term 2 in year 2, children will be taught one multiplicative fluency session per day (10 mins) in addition to their Mastering Number session.
- In LKS2, children will have two multiplicative fluency sessions per day – one involving oral recall and games (such as using a counting stick) and one that involves written practice using times tables booklets.
- In UKS2, children will have one multiplicative fluency session to consolidate learning from LKS2.

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 2,5 and 10 (from Year 2) up to 12 x	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.
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 x 3 = 6 so 4 x 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 6. Children need to be fluent in counting in 6s forwards and backwards from any given multiple.	6s are double 3s. Notice the odd even pattern in 3s, but all even in the 6s – why? Is a number in the 3s always in the 6s? Is a number in the 6s always in the 3s?
Summer 1	Recall and consolidate 6s	See above
Summer 2	Comprehensive assessment of 10, 2, 5, 3, 4, 6 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 6 times tables by the end of Year 3.		

Year 4

	Tables to be taught	Connections to expose
Autumn 1	Consolidate recall of 10, 2,5, 3, 4 and 6 times tables up to 12 x	
Autumn 2	Recall and consolidate 3s, 4s and 6s. Teach multiples of 7. Children need to be fluent in counting in 7s forwards and backwards from any given multiple.	
Spring 1	Consolidate recall of 7s 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.
Spring 2	Recall and consolidate 7s and 8s. Teach multiples of 9. Children need to be fluent in counting in 9s forwards and backwards from any given multiple.	X 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.

Summer 1	Teach multiples of 11 and 12. Children need to be fluent in counting in 11s and 12s forwards and backwards from any given multiple.	Look at patterns in the 11 x table, and the trickier ones to learn – x 11 and x12. 12s are double 6s. Even multiples.
Summer 2	Comprehensive assessment of all multiples and recall and consolidation of those that children are finding difficult – likely to be x 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 x 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.

Assessment and Recording of Fluency:

- In line with the school's policy for assessment and reporting, each teacher is expected to take responsibility for the regular assessment of mathematical fluency; this is done through teacher marking against the benchmarks and progression shown above as well as through pupil reflection.
- In Key Stage 1, children will complete a short, termly assessment to track their progress. Children's attainment will be recorded and interventions put in place for children who are not keeping pace.
- From Spring Term 2 in Year 2, children will be set a Times Tables Rock Stars 'Gig' in school at the end of every half-term. Children's attainment will be recorded and interventions put in place for children who are not keeping pace.
- An annual judgement is made by the class teacher as to whether the child has achieved the expected level in mathematical fluency and this is shared as part of the child's transition to their new year group.
- Attainment is also shared with parents during learning reviews and on reports and, where appropriate, fluency targets will be set as 'next steps' on reports.

Staff Development:

- This takes place through staff meetings, INSET and planned CPD opportunities.
- The school are part of the NCETM Mastering Number Programme engage with ongoing professional development subscribes to NATRE, Plymouth Centre for Faiths and Cultural Diversity (PCFCD), and attends Plymouth RE Hub meetings.
- The Maths subject lead oversees the fluency provision throughout the school and feeds back any new information to the rest of the staff.

Version & Date		Action/Notes	Review
1.0	Sept 2023	Reviewed by coordinator	Annually