

St Margaret's Primary



Number fluency progression document

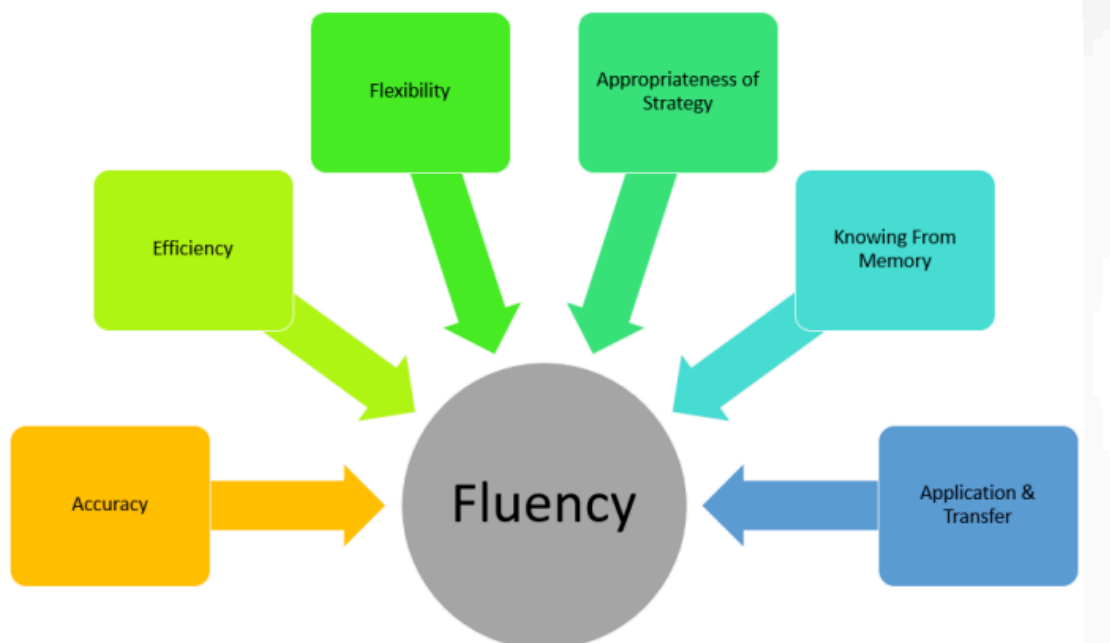
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This document aims to:

- Define what fluency is, why it is essential and the pedagogy used by staff at St Margarets to achieve this.
- List the number facts that children are expected to recall rapidly.
- Identify the methods and strategies that are explicitly taught and the year group in which children are exposed to this.

What is Number fluency?

At St Margaret's we understand how important number fluency is for all of our children. Whilst it is about ensuring that children have automaticity in a range of key facts, it can also be summarised by 6 main points:



Why is fluency important?

- **Fluency is explicitly highlighted in the National Curriculum for England (2014) as a fundamental aim:**

“Pupils should become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that they develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.”

- **It reduces cognitive load**

Pupils who have facts and skills at their fingertips are more likely to attend to the particulars of new learning than those that do not. These pupils have to work harder and are over-burdened.

- **Overcoming reliance on counting on strategies**

Young children struggling with maths often rely on inefficient counting procedures rather than flexible number knowledge. Therefore, by becoming more secure in basic number facts, children will be more accurate and efficient.

- Children can engage with deeper mathematical problem solving

Automatic recall of key facts reduces strain, allowing pupils to tackle complex tasks. Gersten et al. (2009). Without fluency, pupils may struggle to engage with deeper mathematical concepts, as cognitive resources are consumed by basic calculation. Developing fluency frees mental capacity, enabling children to focus on reasoning and problem-solving as well as building upon prior learning.

- Builds Confidence and Engagement

Rapid recall and accurate calculation foster self-efficacy, a critical element for sustained engagement in mathematics (Bandura, 1997).

This document is broken down into two sections:

- Additive facts
- Multiplicative facts

What additive facts should children be fluent in?

KS1 focuses on the additive structure and so by the end of Y2, children should be secure in adding and subtraction within 20. This includes the use of a variety of strategies such as:

- Adding one more and one less
- Number bonds to 10 and 20
- Doubles and near doubles
- Bridging 10
- 5 'and a bit' structure and 10 'and a bit' structure
- Commutativity- knowing that we can reorder the addends to make counting on easier. $2+7= 7+2$
- Redistribution- same sum/ same difference

		Adding 1		Bonds to 10		Adding 10		Bridging/compensating		Y1 facts		
		Adding 2		Adding 0		Doubles		Near doubles		Y2 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	

Progression of additive facts:

At St Margaret's, we have a fluency progression document which maps out the key skills to be taught in each half term, between Early Years and Year 2. This is broken down into 5 strands, as taught in Mastering Number:

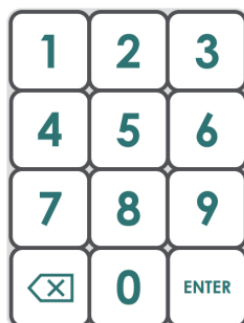
- Subitising
- Cardinality and ordinality
- Composition
- Comparison
- Number facts

Multiplication tables check:

It will help schools to identify pupils who have not yet mastered their times tables, so that additional support can be provided. The Department for Education also publishes statistics on national attainment.

Key features:

- Online (iPads) with keypads
- 25 questions
- 6 seconds to answer each question
- No pass mark



How do we teach additive and multiplicative fluency at St Margarets?

- Daily fluency sessions from Y1-Y6
- Big Maths, Beat That- a weekly low stakes quiz
- Numbots (Y1, Y2), TTRS (Y3, Y4) and Sumdog (Y5, Y6)

Mastering Number (EY-Y6)

- Early Years use M N as their main maths lesson each day.
- From Y1-Y6, children participate in a daily fluency session, aside from the main point of teaching.
- Y1-Y3 focuses on additive facts
- Y4-Y6 focuses on multiplicative facts
- Key features of our MN sessions at St Margaret's include: Gesturing, stem sentences, manipulatives, teaching of ambitious mathematical vocabulary.

Big Maths, Beat that: Weekly low stake quizzes

This closely aligns with our school vision of 'Aspire'. BMBT is completed every Friday and children are encouraged to beat their score from the previous week. They set themselves goals to achieve and are recognised for their weekly progress. KS1 focuses on additive facts. KS2 focuses on multiplicative facts. They are recorded on a central spreadsheet so that children can be identified early and intervention can be put in place. Within each booklet, there are 6 tests. They include new learning as well as old facts to ensure effective retrieval of prior learning. It is important that the booklets are

done in this order as it aligns with the content that they have covered in their main maths lessons and their daily Mastering Number lessons.

This progression document highlight the content of each booklet:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Booklet A (Autumn 2): One more and one less Booklet B: Composition of numbers within 5. Booklet C: Composition of numbers 6,7,8 and 9 Booklet D: Doubles and near doubles within 10 Booklet E: Number bonds to 10	Booklet A: Adding one/ two to an odd or even number Booklet B: Missing addend equations (within 10) Booklet C: Calculations within 20 where 10 is a part. Booklet D: Adding 3 addends Booklet E: Known facts within 10 to larger numbers. (Number bonds to 20) Booklet F: Adding and subtracting through the tens boundary	Booklet A: Adding and subtracting (within 100) Booklet B: Adding and subtracting (within 100- bridging) Booklet C: Within 1000 Booklet D: x5 table and x10 table Booklet E: x2 table Booklet F: x4 and x8 table	Booklet A: x4 and x8 Booklet B: x3 table and x6 table Booklet C: x7 and x9 Booklet D: MTC preparation (online quizzes) Booklet E: fractions Booklet F: division with remainders	Booklet A: square numbers Booklet B: scaling by 10 and 100 Booklet C: multiplying by half, tenths and hundredths. Booklet D: Multiplication and addition (links to division with remainders) Booklet E: scaling of known facts Booklet F: multiplicative composition	Booklet A: Recap Y5 Booklet B: Numbers to 10,000,000 Booklet C: Percentages and fractions Booklet D: Percentages and fractions Booklet E: balance equations Booklet F: order of operations

Marking the booklets:

- The children mark their own booklets so that they can fill in any gaps if necessary.
- The full times table fact is read out. We always say the larger number first so that they are only learning one sound pattern for each fact. For example, if the number fact is $6 \times 7 = 42$, we say seven sixes are forty two.
- The children then repeat that fact back to you. It's important that every child does this.
- For division facts say the following. For 18 divided 3 say "MMM threes are eighteen". The children then say the learnt times table fact: "Six threes are eighteen".
- Once marked the children then share their results with the class and identify a number fact they need to learn.
- A culture is created where children feel proud to share their score, knowing that mistakes are valued

How can families support their child's number fluency at home?

- Numbots, Times Tables Rockstars and Sumdog
- Engage in conversations with their child about their weekly Big Maths, Beat That. What questions do they need to practice in order to beat their score next week? Motivate and encourage them to aspire high!
- Attend KS1/ KS2 parent workshops led by the maths lead at school
- Make some practice flashcards with the two equations on one side and the product on the reverse
- Mathsframe: Multiplication times table check