Our Vision

Our children will experience love, respect, faith and success as unique individuals within our school community and the wider world, now and in the future.

Our Mission

"We ask that Christ will live in our hearts through faith making us rooted and grounded in LOVE."

Mathematical Fluency Policy

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What is Fluency?

The national curriculum for mathematics aims to ensure that all pupils:
Become fluent in the fundamentals of mathematics, including through varied and frequent practice with increasingly complex problems over time, so that pupils develop conceptual understanding and the ability to recall and apply knowledge rapidly and accurately.
(Department for Education, 2014).

The NCETM states:

1. **Fluency demands more of students than memorisation** of a single procedure or collection of facts. It encompasses **a mixture of efficiency, accuracy and flexibility**.
2. Quick and efficient recall of facts and procedures is important in order for students to keep track of sub-problems, think strategically and solve problems.
3. Fluency also demands the **flexibility to move between different contexts and representations of mathematics**, to recognise relationships and make connections, and to make appropriate choices from a whole toolkit of methods, strategies and approaches.

At Great Marsden St John's we want to teach our children strategies which will enable them to get the answer to a mathematical problem in an efficient way. This is the ability to work out calculations mentally without having to resort to a formal written method or write down every step of the calculation.

In order to 'know' these facts, they need to be committed to long term memory so that out working memory is freed up to tackle the more challenging part of the problem. If these basic facts are not committed to memory, they will need to be calculated from scratch every time they are needed resulting in the very opposite of efficiency.

Fluency is essential in the end of KS2 Arithmetic paper where children are asked to solve 36 question in 30 minutes. Efficiency, through fluency is of the essence here but many children still use a formal written method which leads to them running out of time. At Great Marsden St John's we have identified the number facts and mental calculations the children need to cover in each year group.

In the KS2 Reasoning papers, fluency is also essential. Here the children need '**flexibility to move between different contexts and representations of mathematics**, to recognise relationships and make connections' (NCETM). For eg. using the following fact: 2.5km = 2500m.

This document gives class teachers an indication of the number facts and mental calculations the children should be covering in each year group. It should ensure that there is a progression in learning throughout KS1 and 2 and that each year group builds on the knowledge gained in the previous year.

The teaching of Fluency at Great Marsden St John's

Fluency is already taught throughout our daily maths lessons. In addition, in KS 1, fluency is taught through the Mastering Number programme. This is delivered a minimum of 3 times a week for 10 – 15 minutes.

In KS2, in addition to fluency being taught through daily maths lessons, fluency will be built into the weekly timetable through separate 10 minute sessions which will be completed at least 3x a week. At least one session each week should be completed in books and peer or self-marked immediately so children are aware of mistakes they have made and are able to rectify these.

Fluency needs to be taught, it cannot just be picked up. This is already embedded in the KS1 Mastering Number programme. In KS2, the children need to be taught the skills and strategies they will use. It is important to remember that not all children will use the same strategy and they should be given the opportunity to discuss the mental strategy they will use.

It is also important that the children are taught how new learning builds on known facts from previous years, for example, 6 x 8 is the same as 6 x 2 x 2 x 2. It is also important that these skills are included in the fluency sessions AFTER they have been explicitly taught to the class during the main maths lesson. This way, the children are able to apply what they have been taught.

Finally, the children should be able to recall the facts fluently, and this may be as part of a timed test but only as and when the children are ready for this.

This policy should be read in conjunction with the mental calculation policy.

Helpful resources
White Rose Maths '1-Minute Maths'
TT Rockstars https://ttrockstars.com/
Numbots   https://play.numbots.com/#/intro
Topmarks   https://www.topmarks.co.uk/maths-games/7-11-years/mental-maths
Mathsframe   https://mathsframe.co.uk/en/resources/category/22/most-popular

Reception Year and KS1

By the end of KS1, children are expected to:

- Represent and use number bonds and related subtraction facts within 20;
- Recall and use addition and subtraction facts to 20 fluently;
- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables.

Year 3

- Find 10 or 100 more or less than a given number;
- Recall and use multiplication and division facts for the 2, 3, 4, 5, 8 and 10 multiplication tables;
- Multiplying two-digit numbers by 10 (eg 36 x 10 = 360);
- Addition and subtraction of multiples of 10 where the answer is between 0 and 100 (eg. 20 + 30 = 50, 60 + 40 = 100)

Year 4

- Recall multiplication and division facts for multiplication tables up to 12 × 12;
- Multiply any two and three - digit number by 10 and 100, (eg 36 x 100 = 3,600)
- Addition and subtraction of multiples of 10 (eg 80 + 20 = 100, 70 + 40 = 110, 20 + 70 = 90)
- Addition and subtraction of multiples of 100 where the answer is 1000 or less (eg 800 + 200 = 1000, 200 + 700 = 900)
- Halves of any even number to 100 (eg. half of 42 = 21)

Year 5

- Continue to recall multiplication and division facts for multiplication tables up to 12 × 12;

- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 (e.g. 24 x 100 = 2,400, 45 ÷ 100 = 0.45, 3.4 x 10 = 34);
- Addition and subtraction of multiples of 10 (e.g. 70 + 30 = 100, 50 + 60 = 110, 20 + 40 = 60);
- Addition and subtraction of multiples of 100 (e.g. 300 + 400 = 700, 400 + 600 = 1,000, 800 + 500 = 1,300);
- Addition and subtraction of multiples of 1000 (e.g. 3000 + 4000 = 7000);
- Double and halves of multiples of 10 to 100 (e.g. double 60 = 120, half 50 = 25);
- Halves of any number to 100 (e.g. half of 22 = 11, half of 51 = 25.5);
- Squares of all number up to 12;
- And cubes of 2,3,4 and 5.

Year 6

- Continue to recall multiplication and division facts for multiplication tables up to 12 × 12;
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000 (e.g. 24 x 100 = 2,400, 45 ÷ 100 = 0.45, 3.4 x 10 = 34);
- Addition and subtraction of multiples of 10 (e.g. 70 + 30 = 100, 50 + 60 = 110, 20 + 40 = 60);
- Addition and subtraction of multiples of 100 (e.g. 300 + 400 = 700, 400 + 600 = 1,000, 800 + 500 = 1,300);
- Addition and subtraction of multiples of 1000 (e.g. 3000 + 4000 = 7000);
- Double and halves of multiples of 10 to 100 (e.g. double 60 = 120, half 50 = 25);
- Halves of any number to 100 (e.g. half of 22 = 11, half of 51 = 25.5);
- Squares of all number up to 12;
- And cubes of 2,3,4 and 5.
- Multiplication of multiples of 10 and 100 based on known facts (eg 60 x 30 = 1,800)