Prescot Primary School & Nursery

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Our Approach to Multiplication Tables



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At Prescot Primary School & Nursery, we recognise that secure knowledge of multiplication tables is one of the key foundations for developing fluency, automaticity and confidence in mathematics. Being able to recall multiplication and division facts quickly and accurately reduces cognitive load and enables children to focus on more complex mathematical thinking, reasoning and problem-solving.

We carefully plan the teaching of multiplication as one of the four rules of number, ensuring that children develop a strong conceptual understanding of what multiplication means, rather than simply memorising facts. Alongside this explicit teaching, we build in regular, purposeful opportunities for retrieval and practice as children progress from Year 3 to Year 6, helping multiplication facts become increasingly secure and automatic. There is a particular focus in Year 4, as we prepare children to confidently demonstrate their knowledge through the statutory Multiplication Tables Check (MTC).

From Year 3, every child has access to their own iPad and individual profiles on a range of carefully selected mathematics platforms, including Times Tables Rock Stars (TTRS). This enables children to practise regularly, see their own progress and identify the multiplication facts they need to strengthen. Used alongside high-quality classroom teaching, these digital tools give children ownership of their learning and provide a highly motivational way to practise, improve and celebrate success.

1. Rationale

- **Developing Number Sense:** NCETM Mastering Number moves children away from inefficient, low-level counting strategies (like counting by ones) toward a flexible understanding of how numbers are composed, decomposed, and recombined.
- **Achieving Automaticity:** In KS1, it builds foundational fluency with additive structures (using tools like the Rekenrek), while the KS2 programme targets automaticity in multiplication and division facts.
- **Reducing Working Memory Load:** Committing key facts to long-term memory turns them into "thinking tools," freeing up cognitive capacity so pupils can engage in higher-order problem-solving.
- **Deepening Structural Understanding:** It emphasizes mathematical relationships—such as the link between addition and subtraction in KS1, or unitising and the link between multiplication and division in KS2.
- Whilst there are 144 facts to recall for all times tables up to 12, there are actually 36 key facts that children need to be secure and confident in.

The 36 Key Facts

2 x 2 = 4							
3 x 2 = 6	3 x 3 = 9						
4 x 2 = 8	4 x 3 = 12	4 x 4 = 16					
5 x 2 = 10	5 x 3 = 15	5 x 4 = 20	5 x 5 = 25				
6 x 2 = 12	6 x 3 = 18	6 x 4 = 24	6 x 5 = 30	6 x 6 = 36			
7 x 2 = 14	7 x 3 = 21	7 x 4 = 28	7 x 5 = 35	7 x 6 = 42	7 x 7 = 49		
8 x 2 = 16	8 x 3 = 24	8 x 4 = 32	8 x 5 = 40	8 x 6 = 48	8 x 7 = 56	8 x 8 = 64	
9 x 2 = 18	9 x 3 =27	9 x 4 = 36	9 x 5 = 45	9 x 6 = 54	9 x 7 = 63	9 x 8 = 72	9 x 9 = 81

2. Pedagogical Approach

- **Representations and Manipulatives:** Uses physical models (like the Rekenrek and finger patterns/finger gnosis) to help children see mathematical structures in 'one push' rather than counting individual items.
- **Mathematical Oracy and Stem Sentences:** Explicitly teaches precise mathematical language through consistent stem sentences and talking partners, supporting all learners—including those with English as an Additional Language (EAL) - to articulate their reasoning.
- **Inclusive Whole Class Teaching:** Designed so that all children learn together through daily, short, interactive sessions (four to five times a week) without tracking or early-streaming differentiation.
- **Addressing Disadvantaged Gaps:** Targets early discrepancies in numerical readiness, leveling the playing field for disadvantaged pupils by establishing robust number foundations early in Reception and KS1.

3. Implementation

Reception, Year 1 and Year 2

The R and Y1 and 2 NCETM Mastering Number Programme focuses on building foundational number sense, subitising, and additive composition within 20 for Reception and Key Stage 1, rather than formal times tables. Formal times tables and multiplicative structures are introduced later in Year 2 and Lower Key Stage 2.

Key Stage 1 Content Overview

- **Year 1:** Daily 10-15 minute sessions focus on subitising, partitioning, rekenrek use, and secure recall of number bonds within 10 and 20, laying the additive foundation required for multiplication.
- **Year 2:** Deepens number flexibility, calculation strategies, and introduces early multiplicative foundations through equal groups, counting in 2s, 5s, and 10s, and exploring array structures.

- **Times Tables Integration:** While the primary KS1 Mastering Number project centers on additive number sense, formal times table progression (specifically 2s, 5s, and 10s in Year 2, moving to 3s, 4s, and 8s in Year 3) is developed systematically through the parallel NCETM Primary Mastery Professional Development materials.

Year 3 Mastering Number

The **NCETM Mastering Number** program for **Year 3** (part of the *Embedding the Impact* community) bridges early number sense from Key Stage 1 into lower Key Stage 2.

While the official **Mastering Number at KS2** program focuses on *multiplication and division facts* in Years 4 and 5, the **Year 3 central materials** focus strictly on **securing the additive relationship** and **automaticity of addition/subtraction facts within 20**. This lays the critical foundation required to progress smoothly into the Key Stage 2 maths curriculum.

Core Focus & Content Areas

The Year 3 materials are broken down into **eight flexible blocks** taught in short, **10 to 15-minute daily sessions** outside the main math lesson:

- **Factual Fluency Within 10 & 20:** Reviewing and cementing secure recall of single-digit addition facts and their corresponding subtraction facts (e.g., 7 + 8 = 15, 15 - 7 = 8).
- **Calculating Across 10:** Mastering mental strategies to bridge 10 efficiently without counting on fingers (e.g., using "make 10" strategies like 8 + 5 = 8 + 2 + 3).
- **Manipulating Additive Relationships:** Understanding the part-whole relationship deeply so that if a child knows a + b = c, they instantly comprehend c - b = a and c - a = b.
- **Mathematical Language & Stem Sentences:** Children are trained to use structured sentences to explain *why* an answer is correct (e.g., "*Eight is composed of five and three*") rather than just guessing the result.

Year 4 Mastering Number

The NCETM **Mastering Number at KS2** Year 4 program focuses on building core fluency, number sense, and automaticity in multiplication and division.

Program Structure and Approach

- **Daily sessions:** Five short, 10-to-15-minute sessions taught every week alongside the main maths curriculum.
- **Core concepts:** Deep understanding of the **multiplicative structure** using unitizing (seeing groups as a single unit) rather than just rote memorization.
- **Pedagogy:** Heavy reliance on **representations**, structured **stem sentences** for mathematical language, and physical **gestures** to make abstract concepts visual.
- **Connections:** Explicit links between multiplication, related division facts, and early fraction concepts.

Key Year 4 Content Goals

- **Fact retrieval:** Moving from procedural "figuring out" strategies to long-term memory automaticity for key times table facts.
- **Flexibility:** Gaining confidence and numerical flexibility to apply known facts to new, unfamiliar problem-solving contexts.
- **Access for all:** Designed so that all children learn together without tracking or differentiation, supporting conceptual depth alongside speed.

Year 5 Mastering Number

The NCETM Mastering Number at KS2 Year 5 program builds automaticity in multiplication and division facts while deepening pupils' structural understanding of number.

Core Focus Areas

- **Automaticity & Recall:** Securing fluent recall of times table facts and corresponding division facts through regular daily practice.
- **Multiplicative Structures:** Exploring the concept of "unitizing" (understanding groups as a single unit) and applying factor relationships.
- **Scaling & Place Value:** Using ratio tables and applying place-value knowledge to scale facts by factors of 10, 100, tenths, or hundredths.
- **Connections:** Linking multiplication and division equations with fractions and remainder contexts.

Programme Delivery

- **Session Structure:** Delivered through five short 10-to-15-minute sessions each week.
- **Pedagogy:** Uses consistent stem sentences, physical gestures, and representations like unitized counters and ratio tables.
- **Inclusivity:** Designed for whole-class teaching without differentiation, ensuring all pupils access core conceptual structures.

4. How we support the teaching

The learning in the classroom is supported through our digital learning. We have a number of mathematical platforms that can be used both in school and at home.

Look out for the following apps or shortcuts on your child's iPad. Click on each of the images for login page.



Times Tables Rock Stars or **TTRS** provides an opportunity to practise the times tables learnt in schools. Teachers can select the tables that the children can do to allow them to grow in confidence and fluency. New times tables can be added when children have been taught them in lesson time. Heat maps on TTRS can show which times tables children know and similarly, which ones they need to learn.

Magma provides a number of core features to support the maths curriculum. Students can calculate and show their work directly on screen**.** Teachers can track student progress instantly and generate smart reports. The application also automatically corrects solutions to offer instant feedback to students.

Freckle is linked to the children's STAR maths scores which are updated each half term. This platform places the children at the correct level across the whole of the maths curriculum and provides questions that are specifically suitable for each pupil. It is important that children work independently on these activities as if too much support is provided, the algorithm will give them tasks that are too challenging. Daily Fact Practice tasks are available each day to allow the children to increase their speed and proficiency.

5. Assessment

The multiplication tables check (MTC) is statutory for all year 4 pupils registered at state-funded maintained schools, special schools or academies, including free schools, in England. Schools must provide a reason for any pupils who do not participate in the check.

The purpose of the MTC is to determine whether pupils can recall their times tables fluently up to 12, through a set of 25 timed questions. This skill is essential for future success in mathematics, and the check will help schools identify pupils who have not yet mastered this and provide additional support.

Schools must administer the MTC during a scheduled 2-week period in June and can access their pupils' results later on in June. In November, the Department for Education also publishes a statistical release covering national MTC attainment.

To prepare for the above check, and to consolidate learning in year 5 and year 6, we use TTRock Stars in a number of ways. Children can practise their times tables at any time using a variety of different game formats. Children can also complete a 'Soundcheck' which offers them a MTC style check against the clock, (6 seconds). We also test the children on an official MTC style test once every term. All scores are gathered on the portal and we can review their average pass rate out of 25. The children can also keep track of their own progress by checking their 'heatmap' which changes as they practice.