

Multiplication and Division Fact at Manor Junior School

*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.*

Intent

At Manor School, we believe that it is vital that all our children are given the opportunity to see, explore, and understand the mathematical structures and patterns of times tables for real deep, embedded learning. We have always put tremendous effort and resources into getting children to have instant recall of their multiplication table facts.

Times tables are fundamental to many maths topics and knowing the multiplication tables (and their associated division facts) supports mathematical learning and understanding. Those children who have a strong grasp of them tend to be more self-assured when learning new concepts. We want our children to apply and manipulate their understanding of multiplication and division fact to reason and solve problems.

Developing conceptual understanding and the ability to recall and apply times table knowledge rapidly by heart are essential in maths. We want our children to know their times tables really well and be able to apply these facts - and their inverse - up to 12x12, by the end of Year 4, which is a National Curriculum requirement.

Having knowledge of number facts supports pupils to think mathematically as they can use them to reason, see structures and patterns and make connections (Baroody 2006)
Automaticity with number facts frees up the working memory to think about other things such as how to solve a more complex problem. (Willingham 2009)

Implement

Time in maths lessons will be dedicated to teaching specific times tables – developing connections, looking at patterns and creating a deeper understanding of multiplicative reasoning. Links will be made between multiplication facts with conceptual understanding.

In the lower school, there is a focus on one times table being taught each half term with opportunities built in to practice those previously learnt.

Year 3 and Year 4 have a clear breakdown of which tables facts are taught when, building on the knowledge that they are bringing from Year 1 and Year 2. This will involve a variety skills and experiences to help the children embed the knowledge, including: counting, the use of concrete and pictorial manipulatives, playing games, singing songs, use of chanting '3 times 7 is 21, 4 times 7 is 28' etc, use of the NumberLink™ board, the 1, 10, 5 derive approach and exploring related facts e.g. 21 divided by 3 is 7 because 3×7 is 21.

The structure for learning times tables at Manor Junior School will be:

Learn ▶ rehearse ▶ recall ▶ play / apply / assess

For children who need extra support interventions including precision teaching are organised. Year 5 and Year 6 focus on recall and application of multiplication and division facts as well as related facts. Opportunities are given to rehearse and recall to ensure these key facts are embedded.

Impact

By the end of Year 4, we hope that all children are able to rapidly recall all of their times tables up to 12x12 and the related division facts. Our children are not only ready for the Multiplication Times tables Check but also these key facts are learnt and stored so children are able to apply them to other areas of maths. Evidence of children's recall and application of multiplication and division in children's books will be monitored by teachers, year leaders and the maths lead.

| | |
|---|---|
| <p>Year 2 Recall multiples of 2, 5 and 10 up to 12x5 in any order, including missing numbers and related division facts.</p> | |
| <p>Year 3 Revisit multiples of 5 and 10 up to 12x in any order, including missing numbers and related division facts. Recall multiples of 4 and 8 by beginning with a revisit of the multiples of 2 up to 12x 2 in any order, including missing numbers and related division facts. Recall multiples of 3 up to 12 x 3 progressing to recalling this in any order, including missing numbers and related division facts. Explore commutativity, inverse and multiplicative reasoning. Games on TTRS focusing on key times table facts.</p> | <p>Year 4 Revisit multiples of 2, 4, 8 and 3 up to 12x in any order, including missing numbers and related division facts. Use multiples of 3 to build up multiples of 6 and 9 up to 12x in any order, including missing numbers and related division facts. Then explore remaining facts from 11x and 7x table that haven't already been covered. Continue to explore commutativity, inverse and multiplicative reasoning. Factor pairs. Heat maps on TTRS.</p> |
| <p>Year 5 Recall multiples of all times tables up to 12x12 in any order, including missing numbers and related division facts with growing fluency and efficiency. Relate table facts to decimals up to 2dp and multiples of 10 and 100. Understand and recall square and cube numbers in context. Heat Maps on TTRS</p> | <p>Year 6 Prime numbers Highest and lowest common factors. Relate table facts to decimals up to 3dp and multiples of 10, 100 and 1000. Heat maps on TTRS.</p> |

Multiplication Tables – when covered at Manor Junior School

| x | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|----|---|---|----|----|----|----|----|----|-----|-----|-----|
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| 3 | | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| 4 | | | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |
| 5 | | | | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 6 | | | | | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| 7 | | | | | | 49 | 56 | 63 | 70 | 77 | 84 |
| 8 | | | | | | | 64 | 72 | 80 | 88 | 96 |
| 9 | | | | | | | | 81 | 90 | 99 | 108 |
| 10 | | | | | | | | | 100 | 110 | 120 |
| 11 | | | | | | | | | | 121 | 132 |
| 12 | | | | | | | | | | | 144 |

| Year Group | Tables Covered | Colour Code |
|------------|-----------------|-------------|
| 2 | 2, 5 and 10 | |
| 3 | 4, 8 and 3 | |
| 4 | 6, 9, 12, 7, 11 | |

The highlighted 36 multiplication facts are prioritised

| | | | | | | | | | | | |
|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|
| 1×1 | 1×2 | 1×3 | 1×4 | 1×5 | 1×6 | 1×7 | 1×8 | 1×9 | 1×10 | 1×11 | 1×12 |
| 2×1 | 2×2 | 2×3 | 2×4 | 2×5 | 2×6 | 2×7 | 2×8 | 2×9 | 2×10 | 2×11 | 2×12 |
| 3×1 | 3×2 | 3×3 | 3×4 | 3×5 | 3×6 | 3×7 | 3×8 | 3×9 | 3×10 | 3×11 | 3×12 |
| 4×1 | 4×2 | 4×3 | 4×4 | 4×5 | 4×6 | 4×7 | 4×8 | 4×9 | 4×10 | 4×11 | 4×12 |
| 5×1 | 5×2 | 5×3 | 5×4 | 5×5 | 5×6 | 5×7 | 5×8 | 5×9 | 5×10 | 5×11 | 5×12 |
| 6×1 | 6×2 | 6×3 | 6×4 | 6×5 | 6×6 | 6×7 | 6×8 | 6×9 | 6×10 | 6×11 | 6×12 |
| 7×1 | 7×2 | 7×3 | 7×4 | 7×5 | 7×6 | 7×7 | 7×8 | 7×9 | 7×10 | 7×11 | 7×12 |
| 8×1 | 8×2 | 8×3 | 8×4 | 8×5 | 8×6 | 8×7 | 8×8 | 8×9 | 8×10 | 8×11 | 8×12 |
| 9×1 | 9×2 | 9×3 | 9×4 | 9×5 | 9×6 | 9×7 | 9×8 | 9×9 | 9×10 | 9×11 | 9×12 |
| 10×1 | 10×2 | 10×3 | 10×4 | 10×5 | 10×6 | 10×7 | 10×8 | 10×9 | 10×10 | 10×11 | 10×12 |
| 11×1 | 11×2 | 11×3 | 11×4 | 11×5 | 11×6 | 11×7 | 11×8 | 11×9 | 11×10 | 11×11 | 11×12 |
| 12×1 | 12×2 | 12×3 | 12×4 | 12×5 | 12×6 | 12×7 | 12×8 | 12×9 | 12×10 | 12×11 | 12×12 |

Further documents

Hampshire Times Tables Templates

<https://maths.hias.hants.gov.uk/course/view.php?id=231>

Learning and assessing times tables

https://www.cambridgemaths.org/images/espresso_1_learning_and_assessing_times_tables.pdf

Help with times tables

<https://home.oxfordowl.co.uk/maths/primary-multiplication-division/help-with-times-tables/>