**Nether Stowey Primary School's Factual Fluency Policy (up-dated 26-08-24)**

**Factual Fluency Order of Learning** a year before WRM scheme of learning.

| | Term 1 | Term 2 | Term 3 | Term 4 | Term 5 | Term 6 |
|---|---|---|---|---|---|---|
| Year 1 | Experience of counting in 1s, 2s, 5s and 10s<br>Add and Subtract within 10 | | | | | |
| Year 2 | Add and Subtract across 10 | 1x | (1x) 2x | 5x | (5x) 10x | 0x |
| Year 3 | (2x) 4x | (4x) 8x | 3x | (3x) 6x | (6x) 12x | revision |
| Year 4 | 9x | 7x | 11x | Square numbers | revision | Test |

**Intent**

At Nether Stowey we want children to have "automaticity" and not just memorisation of times tables. We aim for "automaticity" [Fosnot & Dolk 2001:85] because this requires children to think about relationships between numbers, e.g. they can recall facts automatically e.g. 9 x 6 = 54, but can also see that 9 x 6 = 10 x 6 – 6. Our aim of achieving automaticity for the children is to reduce cognitive load and allow them to access more complex mathematics.

At Nether Stowey, we want to "teach" times tables and not just "test" times tables. We want children to see the links between times tables and understand that the number system makes sense; it works in a logical way and if we understand that, then learning new facts can be logical, quick and enjoyable.

**Implementation**

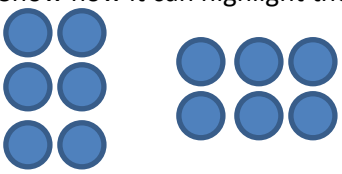
Key to teaching times tables well, is the adults teaching it having good subject knowledge. This has been looked at and addressed through staff meetings on fluency and the introduction, examination and implementation of "Talk Times Tables" by Kate Frood. A further help has been the NCETM "spines" because they often highlight the rules, patterns and logic within times tables.

Teaching:

1. Spend a half-term on a new times table during years 1-4.
2. Times tables (within fluency teaching) should be taught at least 3 times per week for between 5 and 10 minutes.

**Steps to Success**

| | |
|---|---|
| 1. Examination | Find and discuss facts they have already learnt e.g. when learning the ten times tables, they already know 5 x 10 = 50, because they have already learnt 10 x 5 = 50 in the five times tables. |
| 2. Pattern spotting | Focus should be on pattern spotting e.g. all products are even because E x E = E, E x O = E and O x E = E.<br>All products in the 4 times tables are also products in the 2 times tables.<br>All products in the 3 times tables have a digital root of 3, 6 or 9. |
| 3. Counting | Always display the multiplication square or 100 square to support the children and so that everyone can take part.<br>Count in the multiples of chosen times table.<br>Loudly say the multiple and whisper the numbers in between. E.g. 0 1 2 3 4.<br>Move on to just say the multiples in order forwards and backwards. |

| | |
|---|---|
| | Skip count.<br>Chant the times tables in order<br>1 x 5 = 5 (one times five equal five) This ensures the correct vocabulary is used. |
| 4. Concrete | The teaching should involve the making of examples from the times tables e.g. getting three lots of 2 blocks (and 2 lots of 3 blocks) for 3 x 2 and linking it to repeated addition. |
| 5. Arrays | Introduce the concept of arrays.<br>Show the link between an array and multiplication.<br>Show how the orientation of the array can be manipulated to highlight commutativity.<br>Show how it can highlight the inverse of division.<br>  <br>3 x 2 = 6 2 x 3 = 6<br>Make links to square numbers. If the array makes a square it is a square number. |
| 6. Key Facts | The quick facts that children should know:<br>Factor Product<br>Doubles (knowing it is times by 2)<br>Double the factor is double the product. ( 1 x 8 = 8 double is 2 x 8 = 16)<br>Knowing 0 x ? = 0<br>5 x (facts)<br>10 x (facts)<br>Square number (Link to arrays)<br>Cubed Number (KS2) |
| 7. Missing Number | Give children missing number questions. E.g. 2, 4, __, 8 __, 12<br>Additionally give the children missing questions<br>Like<br>1 x 2 = 2 then move onto 1 x __ = 2<br>2 x 2 = __ __x 2 = 4 |

| Additional Learning – Sideways Stretch | |
|---|---|
| 1. Related Facts: | If I know…. Then I know…. |
| Factor 10 times bigger | E.g. If I know 2 x 5 = 10, then I know 20 x 5 = because… |
| Factor 10 times smaller | If I know 400 x 5 = 2,000, then I know 40 x 5 = because… |
| If one factor is doubled | If 2 x 6 = 12, then 2 x 24 = because… |
| If one factor is halved | If 6 x 6 = 36, then 6 x 3 = because… |
| If one factor is a decimal. | If 4 x 6 = 24, then 0.4 x 6 = because… |

**Impact**

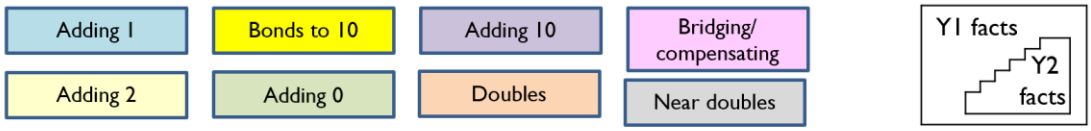
Children leave Nether Stowey Primary School as fluent mathematicians with a range of methods for solving all questions. They not only "recall" facts, but demonstrate automaticity. This automaticity reduces cognitive load and allows them to be successful in complex mathematics.

References: a whole school intervention for teaching, learning and understanding times tables by Jenny Field; Fosnot & Dolk 2001:85; Talk Times Tables by Kate Frood; DfE Non-statutory Guidance for Mathematics June 2020

Appendix 1

# Addition and subtraction facts

The full set of addition calculations that pupils need to be able to solve with automaticity are shown in the table below. Pupils must also be able to solve the corresponding subtraction calculations with automaticity.




| + | 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 |

# A suggested progression for teaching addition facts

**Group A: Year 1 (Within 10)**

1. Adding 1 (e.g. 7 + 1 *and* 1 + 7)
2. Doubles of numbers to 5 (e.g. 4 + 4)
3. Adding 2 (e.g. 4 + 2 *and* 2 + 4)
4. Number bonds to 10 (e.g. 8 + 2 *and* 2 + 8)
5. Adding 10 to a number (e.g. 5 + 10 *and* 10 + 5)
6. Adding 0 to a number (e.g. 3 + 0 *and* 0 + 3)
7. Near doubles (e.g. 3 + 4 *and* 4 + 3)
8. The ones without a family! 5 + 3, 3 + 5, 6 + 3, 3 + 6

**Group B: Year 2 (Bridging 10)**

9. Doubles of numbers to 10 (e.g. 7 + 7)
10. Near doubles (e.g. 5 + 6 *and* 6 +5)
11. Bridging (e.g. 8 + 4 *and* 4 + 8)
12. Compensating

**Alongside**

Partitioning 2, 3, 4, 5, 6 and 10

Partitioning 7, 8 and 9

Partitioning 11 – 20 into single digit addends