



WYNDHAM
SPENCER ACADEMY

Multiplication Policy

September 2022

The Spencer Academies Trust has delegated Full responsibility to the Local Governing Body (LGB) of Wyndham Spencer Academy for this Policy.

It is the LGB's responsibility to ensure this Policy is implemented and reviewed in accordance with statutory and legislative arrangements.

The Spencer Academies Trust may, on an annual, basis undertake audits to confirm that appropriate arrangements are maintained by the Academy.

 **SPENCER**
ACADEMIES TRUST



Date of issue: 1st September 2022

Review date: 1st September 2025

Created by: Nicol Winfield-Murray, Katie Tildesley, Emily Noke and Joe Martin

Contents

1. Why do children need to know their multiplication tables	Page 3
2. The teaching and learning and understanding of multiplication tables	Page 3 - 4
I. An overview of our approach	
II. Explicit teaching	
III. Retrieval practice	
3. Assessment	Page 5
4. References and useful links	Page 5

Policy Aims

This policy aims to ensure all children:

- become fluent in the recall of multiplication and division facts for multiplication tables up to 12 x 12 by Year 4.
- develop conceptual understanding in tandem so that children can be problem posers as well as problem solvers, manipulating and making connections within and between facts.

Legislation

This policy is based on requirements set out in the '[Mathematics programmes of study: key stages 1 and 2](#)', National curriculum in England (2013) and aligns with the guidance for '[Teaching mathematics in primary schools](#)'.



1. Why do children need to know their multiplication tables

Knowing the multiplication tables (and their associated division facts) to automaticity supports the development of knowledge and understanding in so many other aspects of mathematics. Not having retrieval of these facts increases cognitive load and impedes children's ability to move on to learn new mathematical concepts¹.

2. The teaching, learning and understanding of multiplication tables

At Wyndham, we are wary about placing an emphasis on rote learning and rapid recall over understanding of mathematical structures. Our approach aims to expose the mathematical structures and connections within and between the tables so that our children develop fluency and conceptual understanding in tandem as we know each support the development of the other.

I. An overview of our approach

We follow the **National Centre for Excellence in the Teaching of Mathematics' (NCETM)' 'Curriculum Prioritisation in Primary Maths' framework** which provides us with an outline for the teaching of multiplication tables across each year group². The framework considers the pre-requisites children must know about multiplication before learning multiplication tables: unitising, understanding equal and unequal groups, combining equal groups and the early relationship between repeated addition and the symbol for multiplication (x). When first introduced, each multiplication table is given great weighting, acknowledging the fact that the formation of a new neural pathways takes approximately eight to ten weeks¹. If we initially jumped between the tables, without prolonged focus, then the formation of these pathways would be far less likely.



II. Explicit teaching

From Year 2 to 4, multiplication tables are taught in line with the NCETM' curriculum prioritisation framework [Year 1 to 6 overview document](#).

	Unit	Unit name
Autumn 1	1	Review of column addition and subtraction
	2	Numbers to 10,000
	3	Perimeter
Autumn 2	4	3, 6, 9 times tables
	5	7 times table and patterns
Spring 1	6	Understanding and manipulating multiplicative relationships
	7	Coordinates
Spring 2	8	Review of fractions
	9	Fractions greater than 1
Summer 1	10	Symmetry in 2D shapes
	11	Time
	12	Division with remainders

When introducing a new multiplication table, children are explicitly shown which facts are new to them. To do this, we draw upon the commutative law to highlight which facts have previously been taught in the learning of other multiplication tables.

For example, when introducing the 8s, we highlight the facts children already know and then share the following 'new facts':

$$3 \times 8 = 24$$

$$6 \times 8 = 48$$

$$7 \times 8 = 56$$

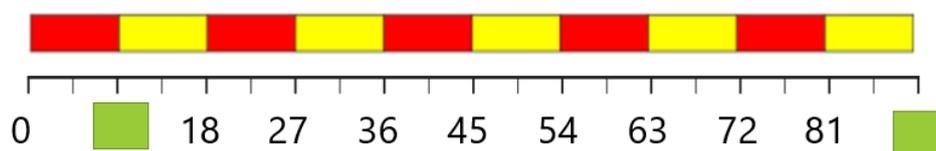
$$8 \times 8 = 64$$

$$9 \times 8 = 72$$



We use **the counting stick**³ daily, in addition to the NCETM⁷ primary mastery professional development materials, to support children in identifying the relationships between facts and the development of automatic recall.

Let's count..



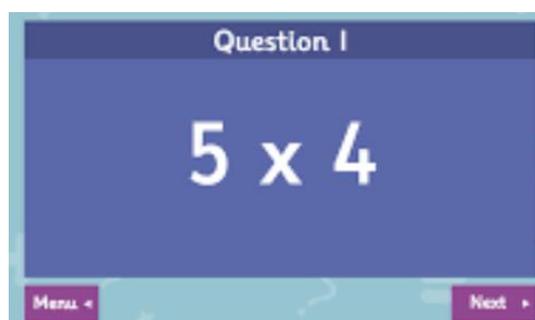
We know we are counting in s so is our first number.

We know that 10×9 is

III. Retrieval practice

Once these facts have been explicitly taught, we use retrieval practice, acknowledging the importance of spacing⁴, to ensure that the fluent recall of these facts is strengthened over time. This begins as soon as the multiplication table has been introduced as this practice will aid the teaching and learning and the table and vice versa.

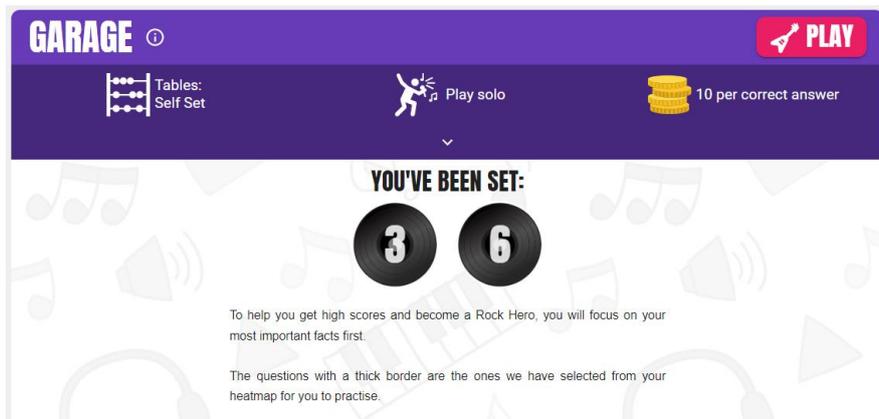
Retrieval practice is intentionally built into daily Fluency Focus sessions. (Note, Year 2 follow the Mastering Number programme but are able to build in additional practice where deemed appropriate). We use **Top Marks Daily 10**⁵ which poses a series of questions that children respond to on whiteboards.



Here, specific multiplication tables are selected for practice and are then presented in a random order. This provides us with an immediate snapshot of where children are at, contributing to our ongoing formative assessment. To ensure mastery of a multiplication table, levels 5 and 6 are used when children are confident recalling multiplication facts as these levels require children to identify missing factors, incorporating knowledge of known division facts.



Children use **Times Table Rock Stars (TTRS)**⁶ on a weekly basis for multiplication tables practice. We provide children with access to both the online platform and to paper sheets.



Paper sheets are sent home weekly based on needs identified from formative assessment methods explained below. Alongside this, a sheet is completed weekly in school to allow children to apply their developing knowledge and understanding.

Name: _____

Week 1 Session 1/5
2s 5s and 10s - 10s

11. $10 \times 3 =$	21. $10 \times 2 =$	41. $9 \times 10 =$
2. $10 \times 10 =$	22. $10 \times 12 =$	42. $11 \times 10 =$
3. $10 \times 4 =$	23. $10 \times 8 =$	43. $1 \times 10 =$
4. $10 \times 11 =$	24. $10 \times 10 =$	44. $1 \times 10 =$
5. $10 \times 6 =$	25. $10 \times 6 =$	45. $3 \times 10 =$
6. $10 \times 2 =$	26. $10 \times 2 =$	46. $4 \times 10 =$
7. $10 \times 1 =$	27. $10 \times 6 =$	47. $12 \times 10 =$
8. $10 \times 11 =$	28. $10 \times 8 =$	48. $11 \times 10 =$
9. $10 \times 6 =$	29. $10 \times 7 =$	49. $6 \times 10 =$
10. $10 \times 9 =$	30. $10 \times 2 =$	50. $7 \times 10 =$
11. $10 \times 12 =$	31. $11 \times 10 =$	51. $10 \times 10 =$
12. $10 \times 5 =$	32. $5 \times 10 =$	52. $3 \times 10 =$
13. $10 \times 3 =$	33. $9 \times 10 =$	53. $11 \times 10 =$
14. $10 \times 10 =$	34. $8 \times 10 =$	54. $10 \times 10 =$
15. $10 \times 4 =$	35. $12 \times 10 =$	55. $3 \times 10 =$
16. $10 \times 6 =$	36. $3 \times 10 =$	56. $3 \times 10 =$
17. $10 \times 9 =$	37. $7 \times 10 =$	57. $5 \times 10 =$
18. $10 \times 12 =$	38. $10 \times 10 =$	58. $3 \times 10 =$
19. $10 \times 10 =$	39. $9 \times 10 =$	59. $2 \times 10 =$
20. $10 \times 1 =$	40. $4 \times 10 =$	60. $7 \times 10 =$

TIME TAKEN: _____ SCORE: **/60**

© 2021-22 Maths Circle Ltd. Licensed to Wyndham Primary Academy

Name: _____

Week 4 Session 3/5
2s 5s and 10s - 2s

11. $\frac{2}{\times 6}$	13. $\frac{2}{\times 4}$	25. $\frac{2}{\times 1}$	37. $\frac{2}{\times 10}$	49. $\frac{2}{\times 8}$
2. $\frac{2}{\times 8}$	14. $\frac{2}{\times 10}$	26. $\frac{2}{\times 12}$	38. $\frac{2}{\times 9}$	50. $\frac{2}{\times 11}$
3. $\frac{2}{\times 2}$	15. $\frac{2}{\times 9}$	27. $\frac{2}{\times 7}$	39. $\frac{2}{\times 10}$	51. $\frac{2}{\times 7}$
4. $\frac{2}{\times 9}$	16. $\frac{2}{\times 1}$	28. $\frac{2}{\times 6}$	40. $\frac{2}{\times 8}$	52. $\frac{2}{\times 8}$
5. $\frac{2}{\times 4}$	17. $\frac{2}{\times 5}$	29. $\frac{2}{\times 6}$	41. $\frac{2}{\times 8}$	53. $\frac{2}{\times 3}$
6. $\frac{2}{\times 11}$	18. $\frac{2}{\times 2}$	30. $\frac{2}{\times 4}$	42. $\frac{2}{\times 1}$	54. $\frac{2}{\times 1}$
7. $\frac{2}{\times 3}$	19. $\frac{2}{\times 9}$	31. $\frac{2}{\times 12}$	43. $\frac{2}{\times 8}$	55. $\frac{2}{\times 1}$
8. $\frac{2}{\times 12}$	20. $\frac{2}{\times 10}$	32. $\frac{2}{\times 6}$	44. $\frac{2}{\times 2}$	56. $\frac{2}{\times 6}$
9. $\frac{2}{\times 9}$	21. $\frac{2}{\times 10}$	33. $\frac{2}{\times 7}$	45. $\frac{2}{\times 11}$	57. $\frac{2}{\times 1}$
10. $\frac{2}{\times 2}$	22. $\frac{2}{\times 12}$	34. $\frac{2}{\times 11}$	46. $\frac{2}{\times 2}$	58. $\frac{2}{\times 7}$
11. $\frac{2}{\times 3}$	23. $\frac{2}{\times 7}$	35. $\frac{2}{\times 10}$	47. $\frac{2}{\times 11}$	59. $\frac{2}{\times 9}$
12. $\frac{2}{\times 10}$	24. $\frac{2}{\times 10}$	36. $\frac{2}{\times 3}$	48. $\frac{2}{\times 10}$	60. $\frac{2}{\times 11}$

TIME TAKEN: _____ SCORE: **/60**

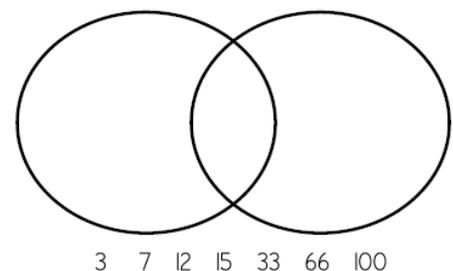
Boxset Reviews are planned weekly to promote spaced retrieval across the curriculum. Questions relating to multiplication and division are produced using the NCETM' assessment questions which are arranged by the ready-to-progress criteria.

9. Complete the multiplication table.

$7 \times 3 =$	21
6 squared =	
_____ $\times 6 =$	42
$8 \times 12 =$	

10. Place the numbers in the correct segment.

Divisible by 3 Divisible by 6





So what does this look like?

Teaching from Years 2 - 6	Daily	Weekly
<p>Year 2 Introduction to multiplication (2, 5, 10)</p> <ul style="list-style-type: none"> • 2MD–1 Recognise repeated addition contexts, representing them with multiplication equations and calculating the product, within the 2, 5 and 10 multiplication tables. • 2.2 Structures: multiplication representing equal groups • 2.3 Times tables: groups of 2 and commutativity (part 1) • 2.4 Times tables: groups of 10 and of 5, and factors of 0 and 1 • 2.5 Commutativity (part 2), doubling and halving <p>See Introduction to division and other related areas</p>	<p>Mastering Number programme</p> <p>Teaching from the NCETM' curriculum prioritisation framework, including highlighting the introduction of new facts</p> <p>Counting stick on introduction of new multiplication table and thereafter till secure</p>	<p>Engagement with Times Table Rock Stars</p> <ul style="list-style-type: none"> - Use of online platform at home and at school - Paper sheet based on identified gaps sent home to encourage practice, supporting those without devices <p>Boxset Reviews</p>
<p>Year 3 2, 4, 8 times tables</p> <ul style="list-style-type: none"> • 3MD–1 Apply known multiplication and division facts to solve contextual problems with different structures, including quotative and partitive division. • 3NF–2 Recall multiplication facts, and corresponding division facts, in the 10, 5, 2, 4 and 8 multiplication tables, and recognise products in these multiplication tables as multiples of the corresponding number. • 3NF–3 Apply place-value knowledge to known additive and multiplicative number facts (scaling facts by 10). • 2.7 Times tables: 2, 4 and 8, and the relationship between them 	<p>Top Marks Daily 10</p> <p>Teaching from the NCETM' curriculum prioritisation framework, including highlighting the introduction of new facts</p> <p>Counting stick on introduction of new multiplication table and thereafter till secure</p>	<p>Engagement with Times Table Rock Stars</p> <ul style="list-style-type: none"> - Use of online platform at home and at school - Paper sheet based on identified gaps sent home to encourage practice, supporting those without devices <p>Boxset Reviews</p>
<p>Year 4 3, 6, 9 times tables</p> <ul style="list-style-type: none"> • 4NF–1 Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number. 	<p>Top Marks Daily 10</p> <p>Teaching from the NCETM' curriculum prioritisation</p>	<p>Engagement with Times Table Rock Stars</p> <ul style="list-style-type: none"> - Use of online platform at home and at school - Paper sheet based on identified



<p>• 2.8 Times tables: 3, 6 and 9, and the relationship between them</p> <p>7 times table and patterns</p> <p>• 4NF–1 Recall multiplication and division facts up to 12×12, and recognise products in multiplication tables as multiples of the corresponding number.</p> <p>• 2.9 Times tables: 7 and patterns within/across times tables</p> <p>See understanding and manipulating multiplicative relationships</p>	<p>framework, including highlighting the introduction of new facts</p> <p>Counting stick on introduction of new multiplication table and thereafter till secure</p>	<p>gaps sent home to encourage practice, supporting those without devices</p> <p>Boxset Reviews</p>
<p>Year 5 and 6</p> <p>See multiplication and division and other related areas</p>	<p>Top Marks Daily 10</p> <p>Teaching from the NCETM' curriculum prioritisation framework</p>	<p>Counting stick to revisit previously taught tables</p> <p>Engagement with Times Table Rock Stars</p> <ul style="list-style-type: none">- Use of online platform at home and at school- Paper sheet based on identified gaps sent home to encourage practice, supporting those without devices <p>Boxset Reviews</p>



3. Assessment

TTRS paper assessments that focus on specific multiplication tables are administered weekly to assess progress in the recall of all taught multiplication tables (including those taught in previous years). This evidence is triangulated with children’s online **heatmaps** that report on the recall speed of each table fact. (Both are stuck in the back of children’s Maths Journals).

	10	2	5	3	4	8	6	7	9	11	12
10	10 × 10	10 × 2	10 × 5	10 × 3	10 × 4	10 × 8	10 × 6	10 × 7	10 × 9	10 × 11	10 × 12
2	2.79s	2 × 2	2 × 5	2 × 3	2 × 4	2 × 8	2 × 6	2 × 7	2 × 9	2 × 11	2 × 12
5	5 × 10	5 × 2	5 × 5	5 × 3	5 × 4	5 × 8	5 × 6	5 × 7	5 × 9	5 × 11	5 × 12
3	3 × 10	3 × 2	3 × 5	3 × 3	3 × 4	3 × 8	3 × 6	3 × 7	3 × 9	3 × 11	3 × 12
4	4 × 10	4 × 2	4 × 5	4 × 3	4 × 4	4 × 8	4 × 6	4 × 7	4 × 9	4 × 11	4 × 12
8	8 × 10	8 × 2	8 × 5	8 × 3	8 × 4	8 × 8	8 × 6	8 × 7	8 × 9	8 × 11	8 × 12
6	6 × 10	6 × 2	6 × 5	6 × 3	6 × 4	6 × 8	6 × 6	6 × 7	6 × 9	6 × 11	6 × 12
7	7 × 10	7 × 2	7 × 5	7 × 3	7 × 4	7 × 8	7 × 6	7 × 7	7 × 9	7 × 11	7 × 12
9	9 × 10	9 × 2	9 × 5	9 × 3	9 × 4	9 × 8	9 × 6	9 × 7	9 × 9	9 × 11	9 × 12
11	11 × 10	11 × 2	11 × 5	11 × 3	11 × 4	11 × 8	11 × 6	11 × 7	11 × 9	11 × 11	11 × 12
12	12 × 10	12 × 2	12 × 5	12 × 3	12 × 4	12 × 8	12 × 6	12 × 7	12 × 9	12 × 11	12 × 12

From these ongoing assessments, it is clear which multiplication tables need to be a focus for the whole class and which for particular individuals, helping to ensure that planned interventions and subsequent feedback are both personalised and impactful.

The **multiplication tables check (MTC)** is statutory for all primary schools and is administered annually. The purpose of the MTC is to determine whether our children can recall their times tables fluently, acknowledging that this is essential for future success in mathematics. Where children are assessed as ‘not yet fluent’, we are able to put additional support in place to ensure they work towards becoming fluent in year 5 and 6 so that they are prepared for more complex mathematics in secondary school.

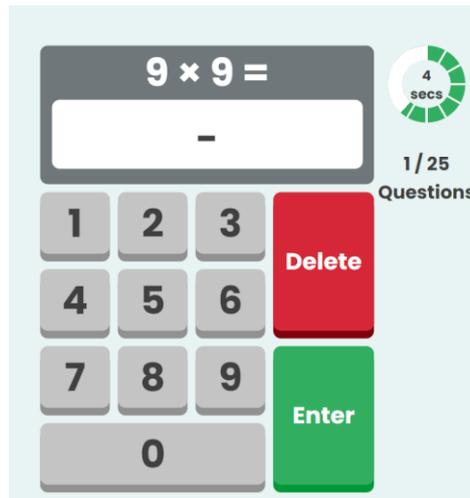


11 × 2 =





Purple Mash Multiplication 2Dos⁶ are set on a monthly basis to familiarise children with the structure of the statutory year 4 multiplication check.



On completion of assessments, we reward children who we deem to be fluent in recalling a particular multiplication table (using the government's guidance of six seconds) with a **multiplication band** that they can wear proudly on their wrist. This increases motivation to practise the recall of multiplication, and associated division, facts.





So what does this look like?

Assessment Years 2 - 6	Daily	Weekly	Half-termly	Termly
Year 2	Whole-class marking completed, informing planning for individuals and whole-class	TTRS paper assessments conducted and recorded in the back of our Maths Journals	Heat map produced <i>Monthly, within Mastering Number session</i> – Purple Mash Multiplication 2Dos	Rising Stars' Progress in Maths Assessments (PUMA)
Year 3	Whole-class marking completed, informing planning for individuals and whole-class	TTRS paper assessments conducted and recorded in the back of our Maths Journals	Heat map produced <i>Monthly, within Fluency Focus session</i> – Purple Mash Multiplication 2Dos	Rising Stars' Progress in Maths Assessments (PUMA)
Year 4	Whole-class marking completed, informing planning for individuals and whole-class	TTRS paper assessments conducted and recorded in the back of our Maths Journals	Heat map produced <i>Monthly, within Fluency Focus session</i> – Purple Mash Multiplication 2Dos	Rising Stars' Progress in Maths Assessments (PUMA)
+ annual multiplication tables check				
Year 5	Whole-class marking completed, informing planning for individuals and whole-class	TTRS paper assessments conducted and recorded in the back of our Maths Journals	Heat map produced <i>Monthly, within Fluency Focus session</i> – Purple Mash Multiplication 2Dos	Rising Stars' Progress in Maths Assessments (PUMA)
Year 6	Whole-class marking completed, informing planning for individuals and whole-class	TTRS paper assessments conducted and recorded in the back of our Maths Journals	Heat map produced <i>Monthly, within Fluency Focus session</i> – Purple Mash Multiplication 2Dos	Rising Stars' Progress in Maths Assessments (PUMA)



References and useful links

1

https://gala.gre.ac.uk/id/eprint/26932/6/26932%20FIELD_A_Whole_School_Intervention_for_Teaching_Learning_and%20Understanding_Jan%202020.pdf

'A whole school intervention for teaching, learning and understanding times tables' by Professor Jenny Field (2020)

2 https://www.ncetm.org.uk/media/y2di0nmn/cp-overview-years-1-6_08122021.pdf

The NCETM's curriculum prioritisation framework long-term overview for years 1 to 6

3 <https://www.youtube.com/watch?v=yXdHGBfoqfw>

A video from Jill Manserg teaching the 17 times table in 10 minutes

<https://www.youtube.com/watch?v=aoUidm704PU>

A video from Nicol Winfield (Maths Lead) and the NCETM sharing the counting stick approach with parents during school closures

4 <http://pdf.retrievalpractice.org/SpacingGuide.pdf>

'How to use spaced retrieval practice to boost learning' by Shana Carpenter and Pooja Agarwal (2020)

5 <https://www.topmarks.co.uk/maths-games/daily10>

A primary maths resource which allows for retrieval of multiplication tables

6 <https://ttrockstars.com/>

A primary maths resource providing a carefully sequenced programme of daily times table practice

7 <https://www.youtube.com/watch?v=H5uM7jTZ6MU>

A video from Purple Mash explaining how their online platform can support children to prepare for their statutory multiplication check