DBJA Times Table Policy

Last reviewed: September 2023

Next review: September 2025

Rationale

Times Tables are at the heart of mental arithmetic, which in itself helps form the basis of a child's understanding and ability when working with number. Once the children have learnt the times tables and related divisions by heart, they are able to work far more confidently – and efficiently – through a wide range of more advanced calculations. This is because rapid recall of times tables frees up working memory for more complex operations. Much of the work children will do involving fractions also relies on fluent recall of multiplication facts. Furthermore, all short and long multiplication and division strategies require instant recall of multiplication tables.

Once children are able to fluently recall their tables, it allows them to free up working memory for more challenging reasoning or problem solving activities. Without automaticity, children's focus during problem solving and reasoning will often be on basic skills rather than the question they are attempting to answer. Therefore, their attention can be drawn away from the learning intention of the task as they become bogged down in trying to recall simple multiplication facts. Becoming fluent in their tables also increases confidence in children when it comes to accessing different areas of mathematics or new concepts within them. Removing the worry associated with carrying out mental calculations is vital for children when it comes to acquiring new and more complex knowledge of Mathematics.

Finally, knowledge of multiplication tables is a fundamental life skill that many adults take for granted. If children finish KS2 without being fluent in their tables, they will not only struggle to access the Maths curriculum in secondary school but also be at risk of lacking the basic mathematical skills needed in adult life.

At Dorothy Barley Junior Academy, we believe that through a variety of interactive, visual, engaging and rote learning techniques, most children can achieve the full times tables knowledge required by the end of Year 4.

This document has been written in order to ensure consistency across the school with regards to the introduction, teaching and assessment of times tables.

Our Aims

1. To raise the profile of the teaching of times tables and to raise overall knowledge of the times tables and related division facts across the school.

2. To explain the expected practices to ensure children learn their times tables.

3. To ensure continuity in practices and progression in times tables.

4. To ensure there is successful teaching and learning of times tables and related divisions within our school.

National Curriculum Times Tables Expectations

The table below shows the times tables knowledge every child is expected to know by the end of each year in Key Stages 1 and 2:

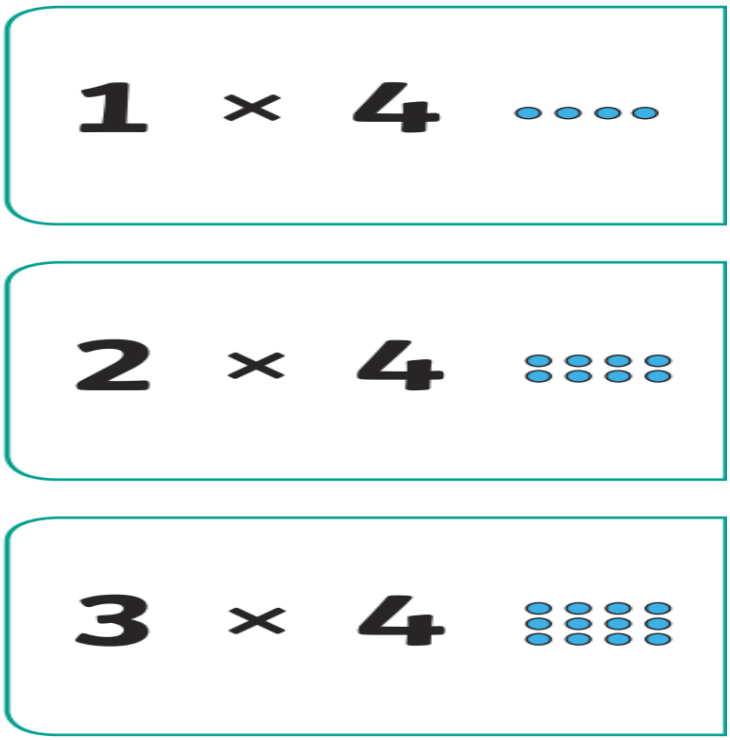
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Count in multiples of 2, 5 and 10. Recall and use all doubles to 10 and corresponding halves.	Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.	Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.	Recall and use multiplication and division facts for multiplication tables up to 12x12.	Revision of all times tables and division facts up to 12x12	Revision of all times tables and division facts up to 12x12

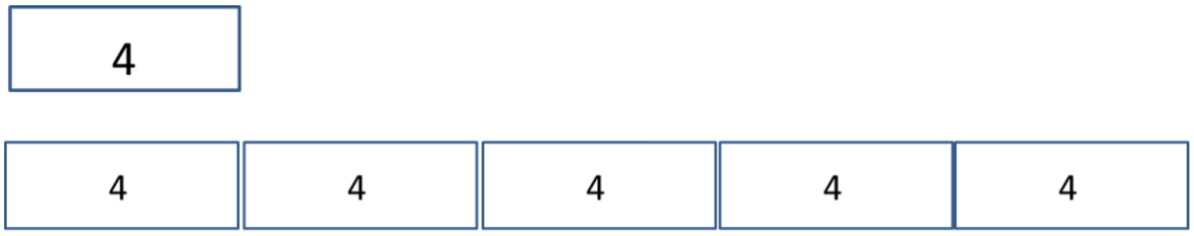
Teaching Strategies and Conceptual Understanding

In Maths lessons, times tables must be taught explicitly at the start of the mathematics lesson for approximately 10 minutes. This should happen 3 times a week in Year 3 and every day in Year 4. The teaching sequence should be based on the overview included at the end of this document, while taking into account the most recent gap analysis. Times tables should be introduced gradually, as per the overview, a range of strategies should be used to teach the tables and children should be tested bi-weekly in Year 3 and weekly in Year 4.

Teaching children times tables knowledge should not just be about the rote learning of facts. Teaching a child to say "3 times 4 equals 12" is ***NOT*** the same as a child knowing and understanding that 3 times 4 equals 12. Conceptual understanding needs to precede reciting times tables facts. In order to promote conceptual understanding, children should be introduced to pictorial and visual representations of times tables facts, such as arrays and bar models.

Examples are shown below:





5 x 4 = 20

As children begin to learn multiplication tables, there are certain facts about how they work that they need to know. Without this fundamental understanding, children are simply rote learning calculations without understanding what they represent.

1) **Repeated addition**

3 x 4 is the same as 4 + 4 + 4

Children need to understand that multiplication can also be represented as repeated addition as this helps them to fully understand what multiplication facts represent. It is important that children use concrete and pictorial representations to form arrays to help them visualise the connection between multiplication and repeated addition.

2) **Multiplication is commutative**

3 x 4 is the same as 4 x 3

Once children understand what multiplication represents they should be taught that it makes no difference in which order you multiply numbers you will always get the same answer. Once children have created arrays they can turn them around to show how 4 groups of 3 will still equal 12. This can be linked to recalling multiplication facts as once they know 3 x 4, they know 4 x 3.

3) Multiplication is the inverse of division

3 x 4 = 12 can be used to work out 12 ÷ 4 = 3

As children begin to learn the 2, 5 and 10 times tables it is important that they understand that multiplication is the inverse of division. Again using resources as well as arrays children should group and share numbers to see the relationship between multiplication and division. They can then move onto seeing calculations alongside each other to cement their understanding.

4) Number families

Once children have commutative understanding they should be exposed to whole number families. This is something that will need to be explicitly pointed out to children but is incredibly useful for children working out missing number problems.

<u>Example unit structure</u>

The below is an example of a 4-week unit that could be carried out for the 3x table in year 3 with different activities for each day (there is also an example with three sessions a week). Each week follows the same structure so the children can become fluent in the individual calculation they are working on. This approach to a unit is based on introducing groups of tables each week and securing them before moving onto the next.

These examples can be altered for all different multiplication tables.

Points to consider:

- If children are struggling with calculations within a specific table, you may want to concentrate practice on those during certain activities rather than including previous tables they've already learnt
- This is simply a guide -the sessions can be mixed up more to include sessions on the Pixl Times Table app or other activities based around reasoning or problem solving using the tables being worked on at that point
- If all children are secure or not you may want to alter the length of focus on a particular table. For instance, if by day 3 of the second week children appear secure on 3x3 and 4x3 you could move onto 6x3, 7x3 and 8x3 earlier. You could also add a 5th week for additional mixed practice if necessary
- Where term lengths alter, a unit could be made longer or shorter. For instance, by adding 3x3 to week one and 3x4 to week 3 you could make the unit 3 weeks rather than 4

- Where possible have weeks where children practice a combination of all the tables they've learnt so far. For instance, after the example below on the 3x table they could spend a week doing games, activities and practice of the 2, 3, 5 and 10 tables combined
- Counting in 3s fluently should precede this, so 2-3 sessions may want to be dedicated to this before moving onto the individual calculations themselves
- This can also be supplemented by generic practice on the pixl app at home as part of homework

Week 1

Day 1	Day 2	Day 3	Day 4	Day 5
Introduction of 1x3, 2x3, 5x3 and 10x3 (teaching of calculations with visuals and resources)	Practice of these 4 calculations using resources and pictorials Develop onto inclusion of division facts	Games and activities based around these four calculations (Include investigation of tables children are finding more challenging)	Drilling of calculations with division facts TTRS	Test on these 4 calculation both in and out of order. Extend to division facts.

Week 2

Day 1	Day 2	Day 3	Day 4	Day 5
Introduce 3x3 and 4x3 (teaching of calculations with visuals and resources)	Practice of 3x3 and 4x3 calculations (include calculation from previous weeks depending on competence) using resources and pictorials Developing onto inclusion of division facts	Games and activities based around these six calculations (focussing more on 3x3 and 4x3) Include investigation of tables children are finding more challenging	Drilling of calculations with division facts TTRS	Test on these 6 calculation both in and out of order. Extend to division facts.

Week 3

Day 1	Day 2	Day 3	Day 4	Day 5
Introduce 6x3, 7x3 and 8x3 (teaching of calculations with visuals and resources) Also link to doubles (6x3 is double 3x3 and 8x3 is double 4x3)	Practice of 6x3, 7x3 and 8x3 calculations (include calculation from previous weeks depending on competence) using resources and pictorials Develop onto inclusion of division facts	Games and activities based around these nine calculations (focussing more on 6x3, 7x3 and 8x3) Include investigation of tables children are finding more challenging	Drilling of calculations with division facts TTRS	Test on these 9 calculations both in and out of order. Extend to division facts.

Week 4

Day 1	Day 2	Day 3	Day 4	Day 5
Introduce 9x3, 11x3 and 12x3 (teaching of calculations with visuals and resources)	Practice of 9x3, 11x3 and 12x3 (include calculation from previous weeks depending on competence) Develop onto inclusion of division facts	Games and activities based around all 12 calculations (focusing more on 9x3, 11x3 and 12x3) Include investigation of tables children are finding more challenging	Drilling of calculations with division facts TTRS	End of 3 times table test (This could be done in a style that replicate MTC to check children are fluent with 6 second parameter)

Home learning

Children need to be sent home times table homework on a regular basis.

The Pixl Times Tables App is a home learning tool to which all pupils have access. Pupils and children are expected to be actively encouraged to access this platform from home.

Assessment

As part of our multiplication tables provision, it is vital that children's progress is assessed and tracked in order to ensure they become fluent. Without assessment taking place of whether or not children have become fluent, there is a danger that children will move onto learning and practicing a multiplication table before they have secured others.

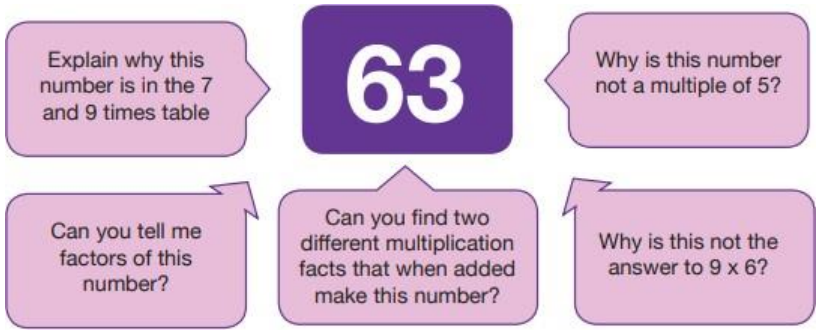
Robust assessment also allows the provision to be tweaked so particular children are given more, or less time on a specific table to meet their needs. It will also allow teachers to tailor any homework or intervention more to address gaps any children may have. Catch-up and intervention are essential to ensuring all children become fluent in their multiplication tables. This does not necessarily just mean pulling them out for additional sessions; it means tailoring the provision to their needs and creating opportunities for them to consolidate learning before moving on. This can be achieved through homework, support within existing sessions, pre-teaching or additional exposure to technology.

At the beginning of Years 3 and 4, children will be baselined to test their current level of fluency against National Curriculum expectations for the end of the previous school year.

Children will then be tested bi-weekly in Year 3 and weekly in Year 4, alternating written with electronic testing using Mathsframe.com. Whichever test is used, these should initially be kept

to testing of the table the children are working on at that time to ensure they are fluent, however this can be extended to mixed practice as the children become more proficient.

If they have not yet achieved the target tables for their year groups, they must work on the tables for the year group below. Once children are able to recall all their times tables facts, they need to be extended through related number facts and real life problem solving/problems in context. The example below provides an idea of how this could work:



MTC Test

At the end of Year 4, all children in Year 4 will take the statutory Multiplication Tables Check, apart from those who are exempt. Results will be published.

Beyond Year 4……

The learning of times tables does not end with the completion of the MTC at the end of Year 4. Some children will still not be secure in their times tables knowledge as they enter Year 5. The assessments conducted at the end of Year 4 will allow teachers to assess which times tables individual children are not secure with and then tailor their classroom support, interventions and homework accordingly.