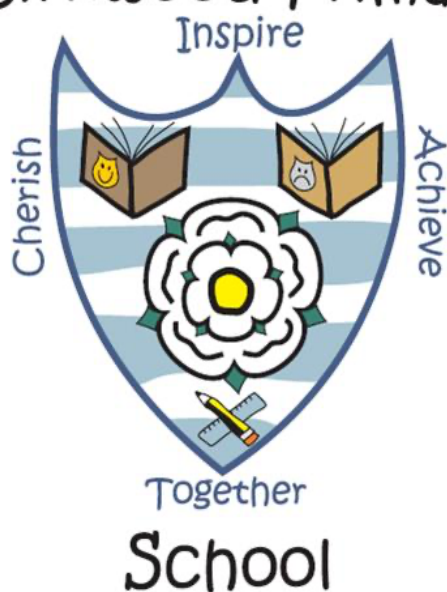


Birkwood Primary



# **WHOLE SCHOOL TIMES TABLE APPRROACH**

**UPDATED SEPTEMBER 2023**

In 2021, Birkwood Primary School implemented a school-wide focus on the development of fluency in order to allow children to become competent mathematicians. By taking this approach, we felt children would become more confident and ready to apply their fundamental skills to a range of mathematical concepts and prevent cognitive overload. We felt that without the basic mathematical knowledge and skills, children may be denied opportunities to learn mathematics at a greater depth and develop reasoning as they move through school.

To support this approach, our team took part in a year-long, evidence based CPD program, with Professor Jenny Field, based on a whole school approach to times tables.

This policy has been written as a result of this evidence based CPD to encourage consistency of the teaching of times tables across our school.

It focuses on 7 steps that our teachers should follow when introducing a new times table. The 7 steps are as follows:

<b>Step 1</b>	The order of times table taught from years one to four. Upper Key Stage 2 to follow similar structure to identify and close gaps.
<b>Step 2</b>	Introduce a new times table focusing on previously known multiplication facts.
<b>Step 3</b>	Make clear conceptual links to real life- <i>'What comes in...?'</i> display.
<b>Step 4</b>	Introduce a new times table using concrete, pictorial, abstract (CPA) approach for all children and using the array as a priority model.
<b>Step 5</b>	Use of consistent language across the whole school.
<b>Step 6</b>	Develop a times table mastery through use of variation and intelligent practice tasks.
<b>Step 7</b>	Timetabled opportunities to practise times tables across years 1-6.

In order to promote a high- quality and consistent approach to the delivery of times tables, we have broken down the 7 steps to provide more detail.

<b>Step 1</b>	The order of times table taught from years one to four. Upper Key Stage 2 to follow similar structure to identify and close gaps.
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Year group	What should be taught?
<b>Reception</b>	<ul style="list-style-type: none"> <li>• Introduce concept of X1 (one group of 5 etc)</li> <li>• Solve problems with doubling and halving</li> </ul>
<b>Year 1</b>	<ul style="list-style-type: none"> <li>• Counting in multiples of <b>2, 5 and 10</b></li> <li>• <b>X1 table (one group of...)</b></li> </ul>
<b>Year 2</b>	<ul style="list-style-type: none"> <li>• Count in steps of <b>2,3 and 5</b> from 0 and in <b>10s</b> from any number forwards or backwards.</li> <li>• <b>Recall and use multiplication and division facts for the 2, 3, 5 and 10 multiplication tables</b>, including recognising odd and even numbers.</li> <li>• <b>Begin to introduce concept of square numbers through arrays</b></li> <li>• <b>X1 table</b></li> <li>• <b>Begin to introduce X0 table</b></li> </ul>
<b>Year 3</b>	<ul style="list-style-type: none"> <li>• Recall and use multiplication and division facts for the <b>3, 4 and 8</b> multiplication tables</li> <li>• Revise <b>X2, X5, X10</b> multiplication tables</li> <li>• <b>X6 and X12 tables</b></li> <li>• <b>Square number times tables</b></li> </ul>
<b>Year 4</b>	<ul style="list-style-type: none"> <li>• Count in multiples of <b>7, 9, 11 25 and 100</b></li> <li>• Recall multiplication and division facts for multiplication tables up to <b>12 x 12</b></li> <li>• Revise <b>X0, X 1, X 2, X 3, X4, X 5, X6, X 8, X10</b></li> <li>• <b>Continue with square number times tables</b></li> </ul>
<b>Year 5</b>	<ul style="list-style-type: none"> <li>• Revise <b>all times tables (including x0 and x1) to 12x12</b></li> <li>• Revise <b>square number times tables</b></li> <li>• Establish whether a number to 100 is prime. <b>Recall prime numbers to 19</b></li> </ul>
<b>Year 6</b>	<ul style="list-style-type: none"> <li>• Revise <b>all times tables (including x0 and x1) to 12 x12</b></li> <li>• Revise <b>square numbers times table</b></li> <li>• Revise <b>prime numbers</b></li> </ul>

## Long Term Overview

	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
<b>EYFS</b>	X 1 (GROUPS)					
<b>Year 1</b>	Counting in steps of 1		Counting in steps of 2		Counting in steps of 5 and 10	
<b>Year 2</b>	Unitising and 2	5	10	3	Squares	Revision
<b>Year 3</b>	Squares And 3	4	8	6	12	Revision
<b>Year 4</b>	9	7	11	Squares	<b>Consolidation and MTC</b>	
<b>Year 5</b>	Audit Individual classes to identify gaps					
<b>Year 6</b>	Audit Individual classes to identify gaps					

**Step 2**

Introduce a new times table focusing on previously known multiplication facts.

$0 \times 10 =$

$1 \times 10 =$

$2 \times 10 =$

$3 \times 10 =$

$4 \times 10 =$

$5 \times 10 =$

$6 \times 10 =$

$7 \times 10 =$

$8 \times 10 =$

$9 \times 10 =$

$10 \times 10 =$

$11 \times 10 =$

$12 \times 10 =$

This term you will be learning the 10 times table.

We have already learnt the 0,1,2 and 5s.

**What facts do we already know?**  
**Which ones do we need to learn?**

Let's make a 'what comes in'.

- Teachers will introduce every new times table in this way, using the same slide. Focus on any facts the children may know already, highlighting them in a colour (black in the example). Help the children build in what they already know. We will focus on the patterns for each times tables, writing up any pattern hints and tips.
- Teachers may display this slide in the classroom and use it as a working document when children have learnt the new multiplication facts.

**Step 3**

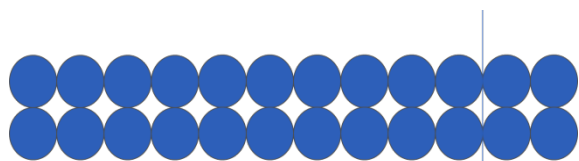
Make clear conceptual links to real life- '*What comes in...?*' display.



- '*What comes in...?*' display to be seen across every classroom in years Rec-6.
- Displays are used to demonstrate examples of times tables in the real world. The display is to be introduced at the beginning of each times table and children should be invited to bring in their own evidence to add to the display. This display should stay up for the duration of the times table being learnt.

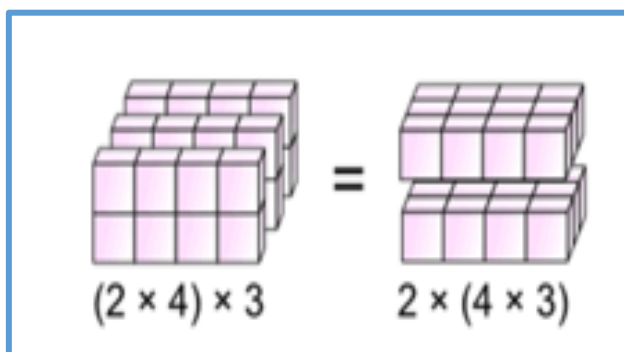
**Step 4**

Introduce a new times table using concrete, pictorial, abstract (CPA) approach for all children and using the array as a priority model.



$$2 \times 24 \text{ or } 24 \times 2$$

$$(10 \times 2) + (2 \times 2)$$



### Making Arrays Real

Link to every day life – array walks, photos, displays



- Arrays are the most versatile model for modelling the properties of multiplication (repeated addition, commutative, distributive and associative).
- Arrays should be used as the main and most common used model for teaching multiplication starting in year 1 so that by year 4 this method is mastered.
- The array as the core representation across the school is to support the properties of multiplication, ensure consistency and progression.
- Other models such as number line and groups to be used alongside.

## Step 5

Use of consistent language across the whole school.

### Reception/KS1:

Teachers should encourage children to develop their use of language by showing children images and asking them to create their own multiplication number sentences. This allows for real life links and checks understanding.



"I can see 6 boats with 3 children in each cup."



6 groups of 2  
6 times 2  
6 lots of 2

Encourage children to write a number sentence/draw an array/create an array using cubes.

### KS2

When introducing commutative properties, teachers should introduce the language:

- **Multiplied by**

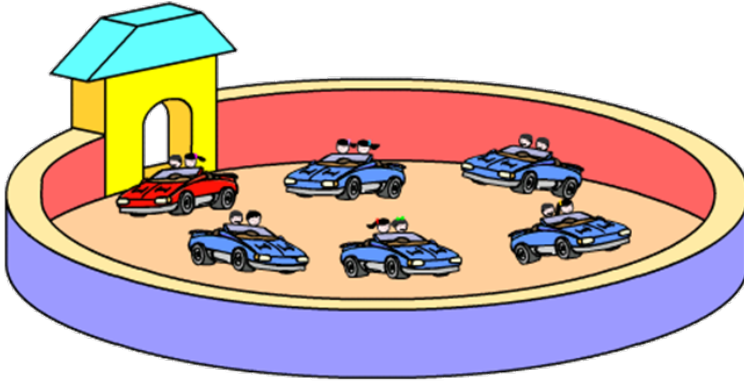
This language works with the following array representation:

**3 multiplied by 1 =**     ●     ●     ●

**3 multiplied by 2 =**     ●     ●     ●  
                                  ●     ●     ●

It is important that children understand all language, as well as the representation to match the language from Year 2 and above as part of the National Curriculum.

Teachers should ensure they are clear about use of language 'multiplier' and 'multiplicand'. They should be confident to identify each within a multiplication problem and should encourage children to be able to identify each one within problems too.



It is fine to use the **multiplier** first and then the **multiplicand** (as long as the teacher is clear and we are all doing the same).

e.g., 6 lots of 2 (things)

Addition number sentence:  $2+2+2+2+2+2=12$

Multiplication number sentence:  $6 \times 2 = 12$  (people)

How many cars? **6** (multiplier)

How many people in each car? **2** (multiplicand)

How many people altogether? **12** (product)



<b>Step 6</b>	Develop a times table mastery through use of variation and intelligent practice tasks.
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Children to achieve automaticity through the following practices...

1. Rapid recall.
  2. Rapid recall with conceptual understanding.
  3. High quality core activities.
  4. Practise TT in order first, then variation.
- Children to also explore the patterns of each new times table as introduced, with particular focus on:
    1. Repetition of 'ones' endings
    2. Addition of both digits
    3. Doubles (x2 x4 x8 etc.)
    4. Number bonds to 10 (x6 x4)

X1	0,1,2,3,4,5,6,7,8,9,0
X9	0,9,8,7,6,5,4,3,2,1,0

X 2	0,2,4,6,8,0
X8	0,8,6,4,2,0

X3	0,3,6,9,2,5,8,1,4,7,0
X7	0,7,4,1,8,5,2,9,6,3,0

X4	0,4,8,2,6,0
X6	0,6,2,8,4,0

<b>Step 7</b>	Timetabled opportunities to practise times tables across years 1-6.
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- ***Maths lesson time*** to explore multiplicative reasoning (2 lessons per half term focussed on one table).
- ***Times table practice time*** to practice specific activities for rapid recall activities - 5 mins 5 days per week.