



Carnforth Christ Church C of E Primary School

PROGRESSION OF TIMES TABLES

The National Curriculum states that these tables should be learned by these year groups:

Year 1: Count on or back in 1s, 2s, 5s, and 10s

Year 2: 0s, 2s, 3s and 5s, 10s

Year 3: 4, 8 and 11s

Year 4: 6, 7 and 9, 12

Year 5: All $\times$ and $\div$ facts (12 $\times$ 12)

Year 6: All $\times$ and $\div$ facts (12 $\times$ 12)

Times Tables

Times tables are a key piece of understanding for any pupil in their mathematical journey. Without them, there are many parts of the mathematical process which will allude them. More challenging mathematical concepts such as fractions can only be fully secured with a strong understanding of times tables before beginning this new learning. A

secure understanding of times tables also allows for pupils to free up more of their working memory. We can only hold a finite amount of information in our working memory and we need this space to understand what a specific mathematical question is asking of us. As such, we should work to teach times tables in a way to move them to a pupil's long-term memory. This means they become instantly recalled allowing a child to confidently face the rest of a mathematical task.

Children must have opportunity to rehearse and repeat times table facts in order for them to transfer to the long-term memory ready to be remembered and not forgotten.

These steps will be taught alongside scheme of learning from White Rose Maths. Individual Maths lessons and time to practice must be in addition to the scheme of work.

This document underlines vital steps which we must taking as a school to secure our children's times table fluency.

Step 1 - Order of introduction

**Note that children will not be moved onto the next step of this progression unless they have secured full mathematical understanding of the previous step.*

Steps	What should be taught?	Progression in learning	
1	- Introduce concept of x1 (one group of 5 etc) - Solve problems with doubling and halving	Steps to be repeated throughout the year. Access to challenges and Maths stations should be provided regularly.	
2	Counting in multiples of 1, 2, 5 and 10	Autumn 1 and 2	Count in 2s up to 24, linking with even numbers and supporting doubles. Count in multiples of 10 in order to 120
		Spring 1 and 2	Focus on counting in multiples of 5 up to 60, linking with knowledge of counting in 10s. Continue to develop fluency of counting in 2s and 10s.
		Summer 1	Count in multiples of 10, 2 and 5 in order with growing fluency.
		Summer 2	Count in multiples of 10, 2 and 5 in order fluently.
3	- Count in steps of 2,3 and 5 from 0 and in 10s from any number forwards and backwards - Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers. - Begin to introduce concept of square numbers through arrays - x1 tables - Begin to introduce the concept of multiplying by 0	Autumn 1	Consolidate counting in steps of 2, 5 and 10 in order from 0 up to 12x. Recall times table facts for x1 in order, including missing numbers and related division facts fluently.
		Autumn 2	Count in steps of 2 and 5 from 0 up to 12x fluently. Recall multiples of 10 up to 12 x 2 in any order, including missing numbers and related division facts with growing fluency.
		Spring 1	Recall multiples of 2 up to 12x2 in any order, including missing numbers and related division facts. Recall multiples of 10 up to 12x10 fluently.

		Spring 2	Recall multiples of 5 up to 12×5 in any order, including missing numbers and related division facts. Recall multiples of 2 up to 12×2 in any order, including missing numbers and related division facts with growing fluency.
		Summer 1	Count in multiples of 3 to 12×3 in order from 0. Recall multiples of 2 up to 12×2 in any order, including missing numbers and related division facts fluently. Recall multiples of 5 up to 12×5 in any order, including missing numbers and related division facts with growing fluency.
		Summer 2	Count in multiples of 3 to 12×3 in order from 0 with growing fluency. Recall multiples of 5 up to 12×5 in any order, including missing numbers and related division facts fluently.
4	- Count from 0 in multiples of 4, 8, 11, 50 and 100 - Recall and use multiplication and division facts for the 3, 4, 8 and 11 multiplication tables - Revise $\times 2$, $\times 5$, $\times 10$ multiplication tables $\times 0$ tables - Square number times tables	Autumn 1	Count in multiples of 3 up to 12×3 in order from 0 fluently.
		Autumn 2	Recall multiples of 3 up to 12×3 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 4 up to 12×4 in order from 0 with growing fluency. Introduce (relating to $\times 4$) and begin to count in multiples of 8 from 0 to 12×8.

		Spring 1	Recall multiples of 3 up to 12×3 in any order, including missing numbers and related division facts fluently. Count in multiples of 4 to 12×4 in order from 0 with fluency. Count in multiples of 8 to 12×8 in order from 0 with growing fluency.
		Spring 2	Recall multiples of 4 up to 12×4 in any order, including missing numbers and related division facts with growing fluency. Count in multiples of 8 to 12×8 in order from 0 fluently.
		Summer 1	Recall multiples of 4 up to 12×4 in any order, including missing numbers and division facts fluently. Recall multiples of 8 up to 12×8 in any order, including missing numbers and related division facts with growing fluency.
		Summer 2	Recall multiples of 8 up to 12×8 in any order, including missing numbers and division facts fluently. Count in multiples of 11 in order from 0 fluently.
5	- Count in multiples of 6, 7, 9, 11, 12, 25 and 100 - Recall multiplication and division facts for multiplication tables up to 12×12 ($\times 6$, $\times 7$, $\times 9$, $\times 11$ and - Revise $\times 0$, $\times 1$, $\times 2$, $\times 3$, $\times 4$, $\times 5$, $\times 8$, $\times 10$, $\times 11$ - Continue with square number times tables	Autumn 1	Recall multiples of 3, 4 and 8 up to $12 \times$, in any order, including missing numbers and related division facts fluently. Recall multiples of 11 up to 12×11 in any order, including missing numbers and related division facts with growing fluency. Fluently count in 6s in order up to 12×6, using multiples of 3 to support.

		Autumn 2	Recall multiples of 11 up to 12×11 in any order, including missing numbers and division facts fluently. Recall multiples of 6 in any order, including missing numbers and related division facts with growing fluency. Fluently count in 7s in order up to 12×7.
		Spring 1	Recall multiples of 6 in any order, including missing numbers and related division facts fluently. Recall multiples of 7, in any order, including missing numbers and related division facts with growing fluency.
		Spring 2	Recall multiples of 7 in any order, including missing numbers and related division facts fluently. Fluently count in 9s in order up to 12×9.
		Summer 1 and 2	Recall multiples of 9 in any order, including missing numbers and related division facts with growing fluency (using $\times 10$ and adjusting by 1 group to find $9 \times$ as a strategy). Fluently count in 12s in order up to 12×12. Recall multiples of 9 in any order, including missing numbers and related division facts fluently. Recall multiples of 12 in any order, including missing numbers and related division facts with growing fluency (using $10 \times$ and adjusting by adding 2 more groups).
6	- Revise all times tables (including $\times 0$ and $\times 1$) to 12×12 - Revise square number times tables - Establish whether a number to 100 is prime. - Recall prime numbers to 19	Autumn 1	Recall multiples of 12 in any order, including missing numbers and related division facts fluently. Recall multiples of all times tables up to 12×12 in any order, including missing numbers and related division facts.

		Children who did not pass the MTC in Year 4 will be tracked in Year 5 and given time during intervention to practise specific gaps in learning. Children will continue to practise times tables regularly to 12x12 in any order, including missing numbers and related division facts throughout the year. Prime numbers and square numbers will be taught during White Rose Maths input.
7	• Revise all times tables (including x0 and x1) to 12 x12 • Explore rules of divisibility. • Revise square numbers times table • Revise prime numbers	Children will continue to practise times tables regularly to 12x12 in any order, including missing numbers and related division facts throughout the year. Prime numbers and square numbers will be taught during White Rose Maths input.

Year 1 - Count on or back in ones, twos, fives and tens

The skill of counting- Before any explicit times table learning is completed, it is essential that children have a secure understanding of counting. This begins as counting along from different numbers to others before progressing to counting groups of objects. By doing this, children are being introduced to the underlying mathematical concept of times tables.

Repeated addition- When learning addition, it is important that Year 1 pupils are introduced to the concept of repeated addition. $2+2+2=6$ By learning this mathematical idea, the pupils are beginning to understand the way that multiplication works.

Year 2 - 0s, 2s, 3s and 5s, 10s

Before teaching the concept of the 2 times table introduce doubling to the pupils. Use practical and visual resources to show doubling. Use vocabulary of double and twice as many (the same again) such as building towers and repeated numicon shapes.

When teaching doubling, reinforce language by linking language of doubling with language of twice as many.

Counting groups of objects and making another group with the same amount.

Teach x10 before x5 and explicitly refer to the connections between these times tables.

Children should be taught the times tables explicitly, and should have time to identify patterns, before having many opportunities to practise times tables as mathematics/morning starter activities, during choosing time, as additional challenges after completing main maths work or on Times Table Rock Stars. Children should be given an account in Year 2 to start practising at home as part of homework.

Year 3- 4, 8 and 11s POSSIBLE- 6 and 9 for confident and secure pupils

Children should be taught the times tables explicitly, and should have time to identify patterns, before having many opportunities to practise times tables as mathematics/morning starter activities, during choosing time, as additional challenges after completing main maths work or on Times Table Rock Stars.

Year 4 - 6, 7 and 9, 12

Link 6 and 9 to their understanding of the 3 times tables. 12 is only 12x12 as by this point they know all other x12 multiples

Children should be taught the times tables explicitly, and should have time to identify patterns, before having many opportunities to practise times tables as mathematics/morning starter activities, during choosing time, as additional challenges after completing main maths work or on Times Table Rock Stars.

Year 5 and 6-

Securing the understanding of all times tables in a range of contexts including x50 x0.5 etc... 10s, 100s, 1000s

The order in which we should teach facts:

Teaching the facts within a times table should be done in a particular order to ensure that the children have a confident understanding and not just one where they can chant their way through.

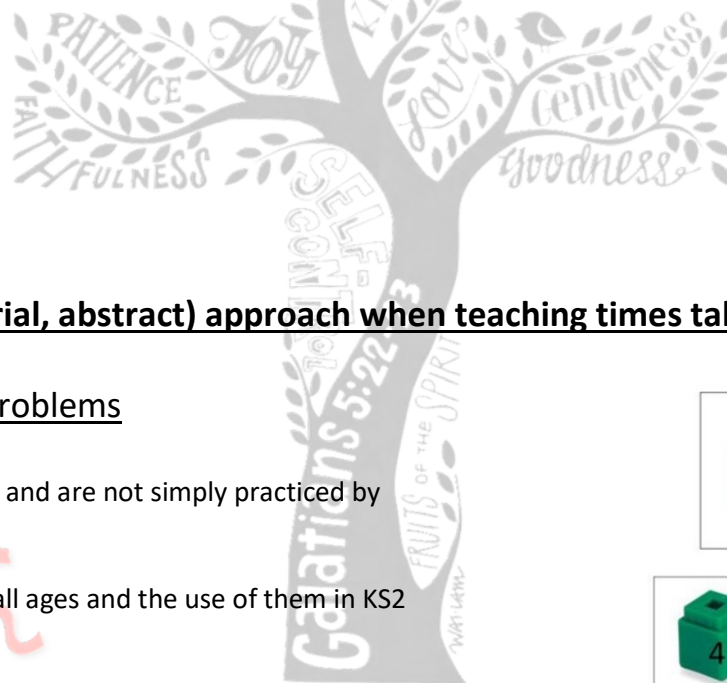
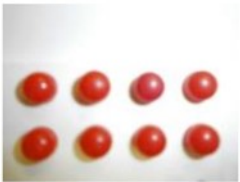
- Start with x2- this allows the children to secure their understanding of doubling and how this can influence the times table.
- x10- This underpins place value understanding.
- x5- teach as half of x10 for speed and understanding using apparatus and visuals
- x3 using a number line or counting
- x4- teach as double x2
- x9- find x10 then take one lot off
- x11- find x10 then add another lot
- x8- double x4

- x6- double x3
- x7- understood using the commutative law

Step 2- Introduce new times tables by making conceptual links to the real world.

Using arrays introduce how 2×4 gives you the same as 4×2 . Talk about commutativity and help the children to make the link that multiplication is repeated addition and that addition is also commutative.

If the children understand commutativity, they need to know less facts to recall their times tables. Times tables should be on display in every classroom (except for Year 6 as they won't have access during SATs assessments) for children to use as a support and reference. The display should be large enough for all children to see and table top resources can be used where necessary.



Step 3 – Ensure using CPA (concrete, pictorial, abstract) approach when teaching times tables

Bar model for representing multiplication problems

It is vital that times tables are explicitly taught to pupils and are not simply practiced by them using online platforms etc...

The teaching methods here can be used with pupils of all ages and the use of them in KS2 should not be diminished.

Introduce new times tables by making conceptual links to the real world.

Play



how 2×4 gives
Talk about
the children to



'Molly has 4 books
Harry has five times as many books as Molly
How many books has Harry?'



$$5 \times 4 = 20 \text{ (books)}$$

age

4	4	4	4	4
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Counting objects-

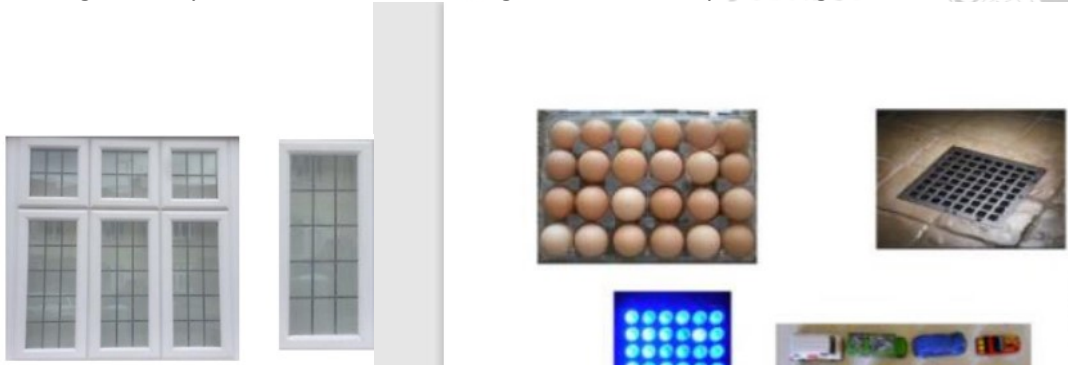
Physical objects are key to understanding the idea of multiplication being a number of groups of. When counting objects, it is important that children see a wide range of physical resources not just mathematical equipment. They should be given the opportunity to count items that create a times table to secure a concrete understanding as well as an abstract one.

Learning styles and the way that they can be engaged- Times Table songs, visuals and practicals

Whenever we are teaching times tables, we can use the wealth of online resources to explore them and engage multiple parts of the brain which helps to secure understanding for pupils. Use of songs and movement can be particularly effective when rehearsing times tables to help to move them to the long-term memory.

Arrays Interpreting and making them.

Looking for arrays in the environment – e.g. the number of panes of glass in a window.



By exploring arrays in the environment, children will start to see the way that they can 'spot' maths every day. You can then move this on to children making their own arrays to represent a particular multiplication fact.

Blank multiplication grids

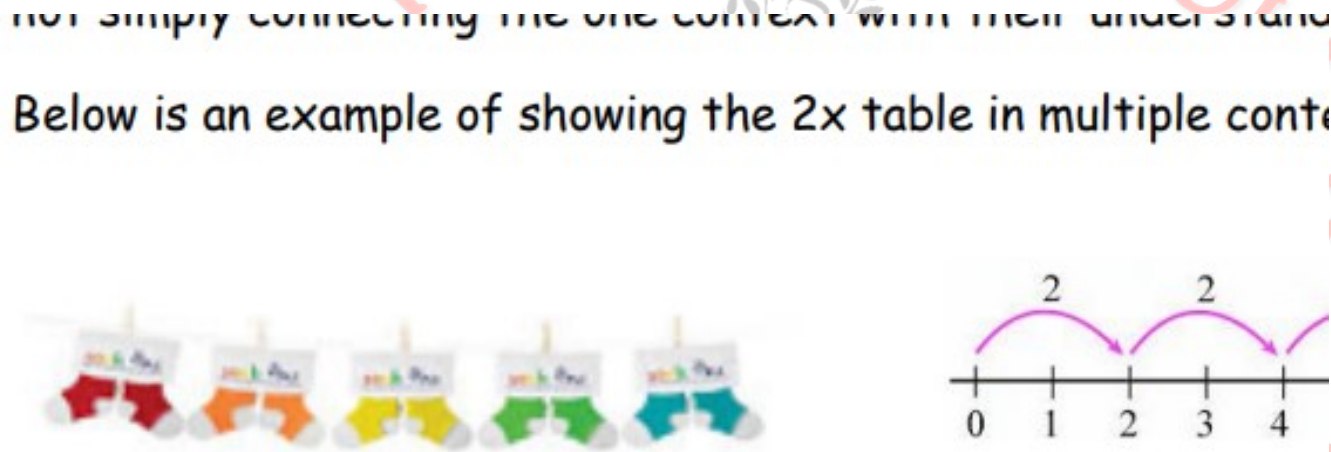
Name: _____

X	1	2	3	4	5	6	7	8	9	10	11	12
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												

Providing multiplication grids for the pupils to complete allows them to rehearse their facts. These can be part filled initially and slowly you reduce the number of facts in the grid so the pupil is completing the entire thing. These then extend to quick times table recall challenges with short in class tests where the times table itself is mixed up for the pupils to recall.

Change the context

When children are exploring a times table, it is important to regularly change the context they are experiencing. This is done with different equipment, the counting stick, number lines and arrays all showing the same times table being learnt to ensure that the children are not simply connecting the one context with their understanding of that times table. Below is an example of showing the 2x table in multiple contexts.



Step 4 – Introduce a new times table by building it around facts that children already know.

Do this together. e.g. We have learned the 2,3,4,5 and

We have already me some of the facts from the 8 times table. What are they?

e.g. We have learned the 2,3,4,5 and
from the 8 times table. What are t

$$\begin{array}{l} 0 \times 8 = 0 \\ 1 \times 8 = 8 \\ 2 \times 8 = 16 \\ 3 \times 8 = 24 \\ 4 \times 8 = 32 \\ 5 \times 8 = 40 \\ 6 \times 8 = \end{array}$$

10 times tables.

1x1	Reduce the facts - understand the relations!					
2x1	2x2					
3x1	3x2	3x3				
4x1	4x2	4x3	4x4			
5x1	5x2	5x3	5x4	5x5		
6x1	6x2	6x3	6x4	6x5	6x6	
7x1	7x2	7x3	7x4	7x5	7x6	7x7

Refer to division facts

Whenever you are teaching times table facts, it is important that you explicitly refer to the connected division as this will help children to secure an in depth understanding. This ability to link a times table fact to the inverse will allow children to become more effective at calculating in many other contexts.

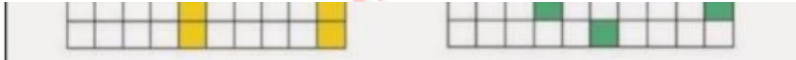
as table fact to the inverse
in many other contexts.

Fact

20

Step 5- Take time to explore the patterns of each times table as you introduce it to the class. Provide opportunities which deepen knowledge and understanding and require children to reason, conjecture, predict and explain.

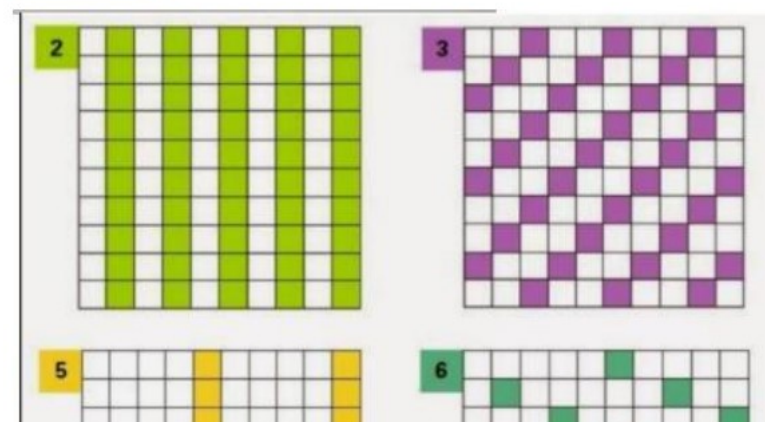
Ensure children engage with 'rich' tasks/investigations linked to times tables which encourage deeper learning, greater levels of reasoning, links to be made and patterns to be discovered.



$4 \times 5 = 10 \square 10$

True or False
Children are given a series of equations are asked whether the

encourage deeper learning, greater levels of reasoning, links to be discovered.



e.g - exploring last digits in multiples

X 1 0,1,2,3,4,5,6,7,8,9,0

X 9 0,9,8,7,6,5,4,3,2,1,9

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

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

X 3 0,3,6,9,2,5,8,1,4,7,0

Step 6 – Consistency of how times tables are represented across the school.

Language used is consistent. Refer to vocabulary list to use with times tables.

Step 7 – Timetabled opportunities to practise times tables facts each week.

Years 2, 3 and 4: 2-3 morning challenge or maths starter sessions each week – evident in teacher's planning.

Use main lesson time to explore multiplicative reasoning.

Times table challenges should also be provided regularly in mathematics lessons. These could include challenges during choosing time in lower school.

Testing: Each week, the children should be tested on the times table which has been a focus for that week. The children could complete questions using the Times Table Rockstar documents. The children's score should be recorded on the class times table tracker. A gap analysis of children's results should be used by the teacher to inform planning, so that gaps in knowledge can be addressed and target children can be identified.

Homework

Children in Years 2-6 will have regular times tables and number facts homework using Times Table Rock Stars (TTRS). This online platform is designed to make learning times tables and key number facts fun and engaging, helping children develop speed and accuracy.

Children should log on weekly to complete the times tables homework assigned by their teacher. Instructions and specific tables to focus on will be set according to what they've been practicing in class. Tournaments and battles can also be selected (with certificates to print) to encourage participation at home.

Encouraging revisiting

It is vital that times table learning is part of every maths lesson to ensure that children are regularly revisiting and rehearsing their facts. This will make sure that the times tables become second nature and are easily pulled into the working memory when they are needed.

- Times Table Rock Stars
- Reasoning and Problem-solving tasks
- Starter activities
- Challenges when work is completed
- Do now/Review activity
- In class tests
- Chanting/singing songs in class
- Quick games for recall

