## WREN'SNEST PRIMARY SCHOOL

School Key Policy 2023-2024

MultiplicationPolicy - Teaching Times Tables

September 2023
Document to be read in conjunction with other key school policies (listed within document)

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

It is not intended to be year group specific. Instead, it outlines 7 key steps that teachers should consider when introducing a new times table.

Step 1 Order of introduction
Step 2 Making conceptual links to the real world - display
Step 3 Use of the concrete, pictorial, abstract approach - use of arrays to model
Step 4 Introduce new times table by building it around facts already known
Step 5 Explore patterns in times tables. Reasoning. Investigation. Deeper learning. Making links
Step 6 Consistency of language
Step 7 Time-tabled opportunities to practise times tables facts

## Step 1 - Order of introduction



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

Make a classroom display Coser


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

Be clear which representation you will use and why.
Arrays for representing multiplication.

Arrays are the most versatile model for modelling the properties of multiplication (repeated addition, commutative, distributive, associative, inverse of division).

Make use of array sliders!
$2 \times 24$ or $24 \times 2$
$(10 \times 2)+(2 \times 2)$

$12 \times 2=(4 \times 3) \times 2=24$

## Bar model for representing multiplication problems.


$5 \times 4=20$ (books)

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 10 times tables. We have already me some of the facts from the 8 times table. What are they?
$8 \times 0=0$
$8 \times 1=8$
$8 \times 2=161$
$8 \times 3=24$
$8 \times 4=32$
$8 \times 5=40$
$8 \times 6=$
$8 \times 7=$
$8 \times 8=$
$8 \times 9=$
$8 \times 10=80$
$8 \times 11=$
$8 \times 12=$

Which facts are left to learn?

Which facts might help us to work out the facts we don't know?

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.

e.g. - exploring last digit in multiples


Investigating how many different possible ending there are for different times tables. Spotting patterns and relationships.
e. 9 - exploring last digits in multiples


## Intelligent Practice



Other examples of ways to deepen knowledge and understanding

Always, sometimes, never

- Multiples of 3 are all odd
- If the digits of a number add up to 9 the number is a multiple of 9
- Multiples of 7 are odd


## "What's the same, what's different ...

 between the three times table and the six times table?"
## True or False

Children are given a series of equations are asked whether they are true or false:

$$
4 \times 6=23 \quad 4 \times 6=6 \times 4 \quad 12 \div 2=24 \div 4 \quad 12 \times 2=24 \times 4
$$

Step 6 - Consistency of how times tables are represented across the school. Language used is consistent.

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 teacher is clear and we are all doing the same).
e.9. 6 lots of 2 (things)


Addition number sentence
 Mulplication number sentence: $\qquad$ How many cars? (multiplier)
How many people in each car? $\square$ (multiplicand)

How many people altogether? 12 (product)

Step 7 - Timetabled opportunities to practise times tables facts each week.
$3 \times 10$ minute slots each week - evident in teacher's planning.


Use main lesson time to explore multiplicative reasoning.

## The Pendulum



Split class into two teams. Must call out next multiple in times tables.

Forwards and backwards.

## Start at different points

Quiet and loud (6X can be heard in X3)
Can apply to other areas of curriculum e.g. counting in decimals, fractions, percentages.

## Beach ball

Throw round classroom. Person receiving must say next multiple in times tables.

Pass around room. Count silently in head. Teacher says 'back to me'. Ball returned to teacher. When teacher receives, children call out loud the next multiple.

Or...
Teacher calls out question e.g. $3 \times 7$ Throws to person. Before person catches ball, ret of class must call out the answer.



- Sit in pairs.
- Stand when pointed to and say next multiple in times table (e.g. 8 X table)
- Repeat but this time have to remember the order they stood up in in the last round.
- Stand up if your number was 8 more than 24
- Stand up if your number was even. Why is that?
- Stand up if yours was a square number.
- Stand up if yours was 16 less than 32
(could hold numbers up on white boards)

Target boards


Tell me an odd number. And another. And another. How do you know?

- Which numbers are factors of 20? How do you know?
- Is 19 a multiple of 3? Convince me.
- How many prime numbers can you find?
- Can you find three numbers than you can link to make a multiplication/division sentence?


## Counting Stick



## Suggested script/structure for using the counting stick

Learning the 7 times table (adapt for times table being learnt)
Step 1: What number do we always start with?
Step 2: What times table are we learning?
(repeat steps 1\&2)
Step 3: Can you multiply it by 10?
(repeat steps 1\&2)
Step 4: Can you double it?
Step 5: Can you double that?
(repeat steps 1-5 in order)
Step 6: I have a very special number to tell you and it is called the key. Our key in this times table is 21. What is our key?
Step 7: Can you double the key?
Step 8: This is really hard now, can you triple the key?
(Repeat steps 1-8 in order)

Step 9: Who remembers our key? (children answer) Double it. Now add seven (repeat steps 1-9)

Step 10: Everybody touch your nose. That's 35. Touch your nose.
Step 11: Now everybody needs to help me. There is one number I always forget. It's 56. What
number do I always forget?
(Repeat steps 1-11)
Begin to remove the cards as children become more confident with remembering
https://www.youtube.com/watch?v=yXdHGBfogfw

## Monitoring information:

The policy will be promoted and implemented throughout the school by all staff. The school will review this policy through the Curriculum and Standards committee annually and assess its implementation and effectiveness.

Links with other policies:
Other important documentation to be read in conjunction with the Multiplication Policy:

- Wren's Nest Mathematics Policy
- White Rose Medium Term Planning
- Wren's Nest Visual Calculation Policy
- Wren's Nest Visual Fraction Policy
- White Rose Manipulatives Policy
- The NCETM Cross Curricular Links
- Wren's Nest Marking Policy

Date of Review: September 2023

