Multiplication Tables Policy

Approved by:	Governing Body	**Date:**	
Last reviewed on:	November 2023		
Next review due by:	November 2025		

Our Vision

Though we are many, we are one body. Together, we learn and grow.
God is at the heart of all we do, shining His light to guide us on our journey. Together, we face change and transformation with courage.
In love, we nurture all to be resilient, hopeful and aspirational; to become the very best version of ourselves, knowing that we are loved.
Each member of our school community is honoured and celebrated for their unique character and qualities: difference is met with dignity and compassion. Though we are many, we are one body.
Our community at Brierley stretches beyond the school, where we share God's message of love through our actions, our thoughts and our words as we continue on life's path.

Introduction

This policy outlines the teaching, organisation and management of the process and implementation of times tables throughout the school. 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. If a child is secure and fluid with their times tables knowledge, they are able to work more confidently with advanced calculations.

Aims:

- To raise the profile of the teaching of times tables and to raise the overall knowledge of times table facts across the school
- To explain the expected practices, to ensure children learn their times tables
- To ensure continuity in practices and progression in times tables
- To develop mathematical language associated to multiplication and division (e.g. product, multiples of, scale up etc.).

Curriculum and times tables:

Year Group	**Tables to be learnt**	**Beginning**	**Working towards**	**Secure**
1	Counting in Multiples of 2,5 and 10	Children to count forward from any given number to 20 and backwards from any given number to 0.	Children can count in multiples of 2, 5 and 10 with thinking time.	Children can count in multiples of 2, 5 and 10 with fluidity.
2	2,5 and 10	Children can repeat their 2, 5 and 10 times tables in order.	Children can complete 2, 5 and 10 times tables out of order.	Children can complete their 2, 5 and 10 times tables and division facts.
3	3, 4 and 8	Children can repeat their 3,4 and 8 times tables in order.	Children can complete their 3,4 and 8 times tables out of order.	Children can complete 3,4 and 8 times tables and division facts.
4	6,7,9,11 and 12	Children can repeat their 6,7,9,11 and 12 times tables in order.	Children can complete their 6,7,9,11 and 12 times tables out of order.	Children can complete their 6,7,9,11 and 12 times tables and division facts.
5/6	In years 5 and 6, children should catch up where they have fallen behind on their previous times tables in other year groups. In these year groups, children should recall multiplication and division facts for all multiplication tables from 1 to 12. Year 5: Multiply and divide numbers mentally drawing upon known facts e.g. 30 x 40, 70 x 80, 0.7 x 6 Year 6: To perform mental calculations, including mixed operations and large numbers			

YEAR	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
FS2	Experience of counting in 1s through songs, chants, rhymes and stories					
Year 1	Experience of counting in 1s, 2s, 5, 10s					
Year 2	1x	(1x) 2x	5x	(5x)10x	0x (and revision)	revision
Year 3	(2x) 4x	(2x) 4x	(4x) 8x	(4x) 8x	3x	3x revision
Year 4	X6	x7	x11 x9	X12	revision	Test

Extra year group requirements:

Year group	**Requirement**
FS2	Count in steps of 1 within 10
Year 1	Count forwards and backwards within numbers 0-100
2	Count in steps of 3 from any given number, forwards and backwards
3	Count from 0 in multiples of 4,8, 50 and 100
4	Count in multiples of 6,7,9,25 and 1000

Teaching Times Tables:

FS2

In FS2, Mastering Number is taught daily to develop good number sense. Children are encouraged to count in one’s through songs, rhymes, chants and stories. The focus is on ordinality and cardinality.

Year 1

In Year 1, the children are taught to count in multiples of 2’s, 5’s and 10’s. This is done through daily chants, rhymes and songs.

Year 2:

Year 2 will focus on the 2, 5 and 10 times tables to ensure that they are fluent so that they are prepared for the expectations of year 3. The planning and teaching of times tables should focus on strategies and techniques to aid the children in understanding the concept of times tables; not just tested.

- Arrays
- Finding patterns
- Making links between known times tables where relevant

Other activities and resources that can support learning of times tables:

- Counting sticks
- Chanting
- Times table grids
- Games and challenges
- Songs

Years 3 and 4:

From Monday to Thursday, times tables should be explicitly taught at the start of the mathematics lesson for approximately 5 minutes. Each week, the planning should focus on one times table or be planned from the most recent gap analysis. The planning and teaching of times tables should focus on strategies and techniques to aid the children in understanding the concept of times tables; not just tested.

- Arrays
- Finding patterns
- Making links between known times tables where relevant

Other activities and resources that can support learning of times tables:

- Counting sticks
- Chanting
- Times table grids
- Games and challenges
- Songs

Mastering Number

In Years 4 and 5, Mastering number is delivered four times per week. This project enables the children to develop fluency in multiplication and division facts and a confidence and flexibility with number that exemplifies good number sense.

Years 5 and 6

In Years 5 and 6, the children continue to consolidate their prior knowledge of multiplication and division facts up to 12 x12 so that they can continue to apply this knowledge to real life situations and maths problems.

ASSESSMENT:

- Each Friday, the children are tested on the times tables that have already been taught. The children will complete 25 questions, giving 6 seconds to answer each question (in line with the Year 4 MTC).

- A gap analysis of children’s results is used by the teacher to inform planning, so that gaps in knowledge can be addressed and target children can be identified. This information is used to inform provision for those who do not keep up with expectations.

- Any children who have gaps in their knowledge, receive targeted intervention to close gaps so that they meet age related expectations. In years 5 and 6, children should catch up where they have fallen behind on their previous times tables in other year groups. These interventions follow the same steps and teaching methods that are delivered in the classroom, but focus on the gaps in knowledge only.

Application of times tables in calculation:

(See calculation policy)

Children’s understanding of times tables is only relevant if they are aware of their application in calculations and real life. In order to do this, the children should be using instant recall of times tables when needed in calculations. This awareness can be created in several ways:

- Highlighting when times tables are being used during modelling
- Discussion of how they are being applied during problem solving
- Inclusion of real-life examples of times tables application
- Practising times tables on a daily basis
- Marking that identifies misconceptions due to incorrect calculating

Times tables on display:

Times tables should be on display in every classroom 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.

TEACHING OF TIMESTABLES

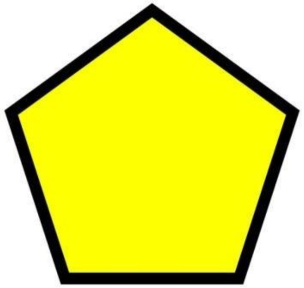
Step 1	**Order of introduction**
Step 2	**Making conceptual links to the real world - display**
Step 3	**Use of the concrete, pictorial, abstract approach – use of arrays to model**
Step 4	**Introduce new times table by building it around facts already known**
Step 5	**Explore patterns in times tables. 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

Year group	What should be taught?	Additional comments
Reception	• Introduce concept of X1 (one group of 5 etc) • Solve problems with doubling and halving	
Year 1	• Counting in multiples of **2, 5 and 10** • **X1 table (one group of…)**	
Year 2	• Count in steps of **2,3 and 5** from 0 and in **10s** from any number forwards or 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 table** • **Begin to introduce X0 table**	
Year 3	• Count from 0 in multiples of **4, 8, 50 and 100** • Recall and use multiplication and division facts for the **3, 4 and 8** multiplication tables • Revise **X2, X5, X10** multiplication tables • **X1 and X0 tables** • **Square number times tables**	Link x4 to x2. Link x8 to x4.
Year 4	• Count in multiples of **6, 7, 9, 25 and 100** • Recall multiplication and division facts for multiplication tables up to **12 x 12** (**x6, x7, x9, x11 and x12** are new tables for this year group) • Revise **X0, X 1, X 2, X 3, X4, X 5, X 8, X10** • **Continue with square number times tables**	Link x6 to x3. Link x12 to x6
Year 5	• Revise **all times tables (including x0 and x1) to 12x12** • Revise **square number times tables** • Establish whether a number to 100 is prime. **Recall prime numbers to 19**	
Year 6	• Revise **all times tables (including x0 and x1) to 12 x12** • Revise **square numbers times table** • Revise **prime numbers**	

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

Make a classroom display



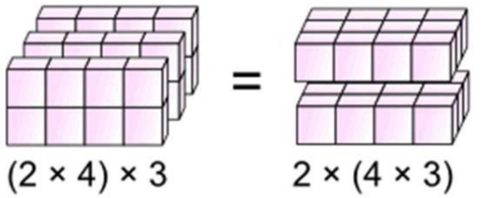
Step 3 – Ensure using CPA (concrete, pictorial, abstract) approach when teaching times tables

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!



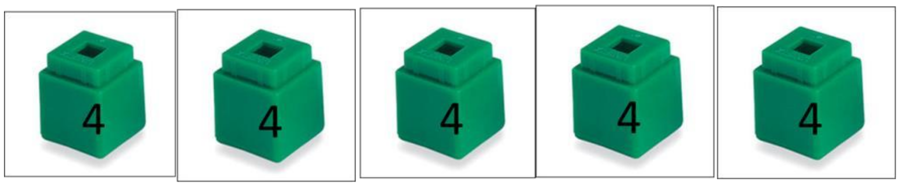
2 x 24 or 24 X 2

12 x 2 = (4 x 3) x 2 = 24

(10 x 2) + (2 x 2)

Bar model for representing multiplication problems

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



5 x 4 = 20 (books)

4

4	4	4	4	4

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

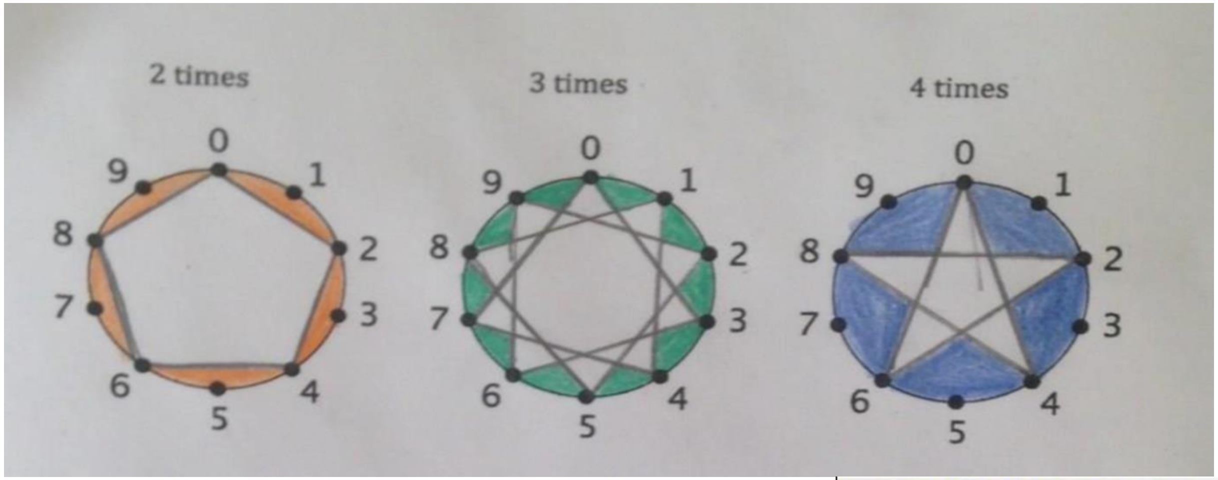
Do this together.

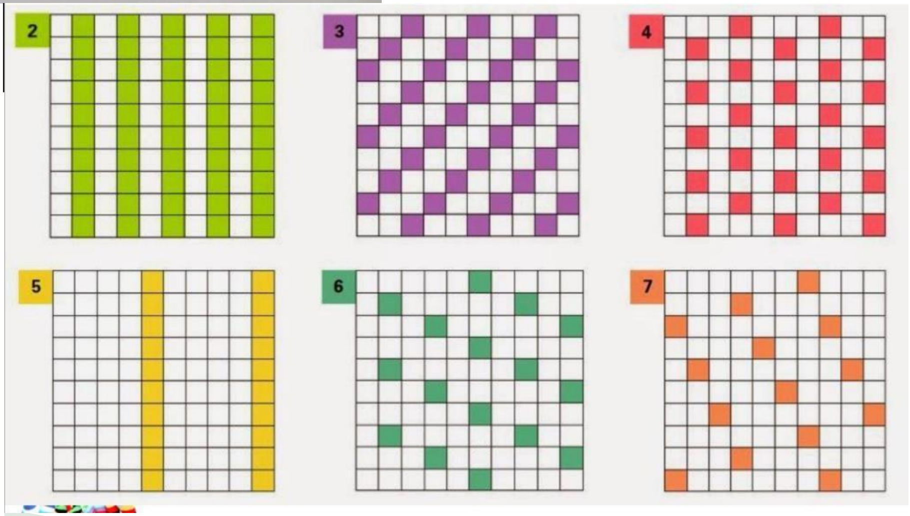
e.g. We have learned the 2,3,4,5 and 10 times tables. We have already me some of the facts from the 8 times table. What are they?

0x8=0
1x8=8
2x8=16
3x8=24
4x8=32
5x8=40
6x8=48
7x8=56
8x8=64
9x8=72
10x8=80
11x8=88
12x8=96

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

$0 \times 3 = 0$
$1 \times 3 = 3$
$2 \times 3 = 6$
$3 \times 3 = 9$
$4 \times 3 = 12$
$5 \times 3 = 15$
$6 \times 3 = 18$
$7 \times 3 = 21$
$8 \times 3 = 24$
$9 \times 3 = 27$
$10 \times 3 = 30$
$11 \times 3 = 33$
$12 \times 3 = 36$

10 possible endings

$0 \times 6 = 0$
$1 \times 6 = 6$
$2 \times 6 = 12$
$3 \times 6 = 18$
$4 \times 6 = 24$
$5 \times 6 = 30$
$6 \times 6 = 36$
$7 \times 6 = 42$
$8 \times 6 = 48$
$9 \times 6 = 54$
$10 \times 6 = 60$
$11 \times 6 = 66$
$12 \times 6 = 72$

5 possible endings

What do you notice about the digital roots?

Investigating how many different possible ending there are for different times tables. Spotting patterns and relationships.

e.g - exploring last digits in multiples

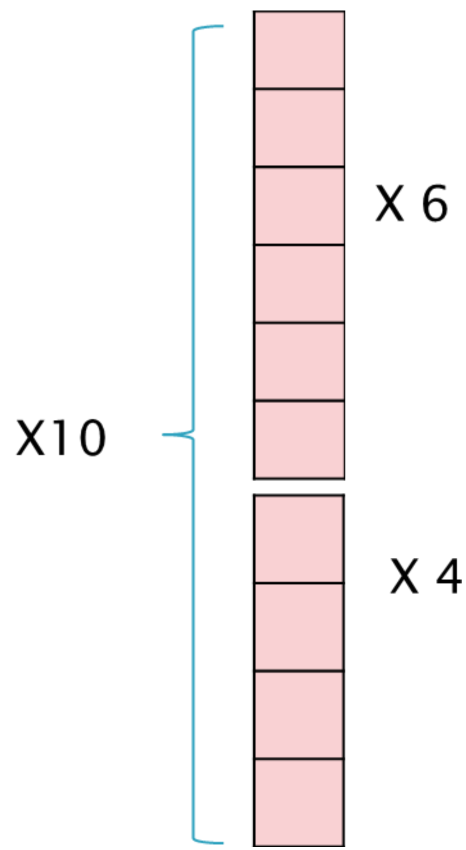
X 1 0,1,2,3,4,5,6,7,8,9,0
X 9 0,9,8,7,6,5,4,3,2,1,9

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

X 4 ______________________________
X 6 ______________________________

Pairs of times tables.
What do you notice?
What relationships can you find?



Intelligent Practice

2 × 3 =	6 × 7 =	9 × 8 =
2 × 30 =	6 × 70 =	9 × 80 =
2 × 300 =	6 × 700 =	9 × 800 =
20 × 3 =	60 × 7 =	90 × 8 =
200 × 3 =	600 × 7 =	900 × 8 =

What's stayed the same?

What's different?

3 × □ + 2 = 20

3 × □ + 2 = 23

3 × □ + 2 = 26

3 × □ + 2 = 29

3 × □ + 2 = 35

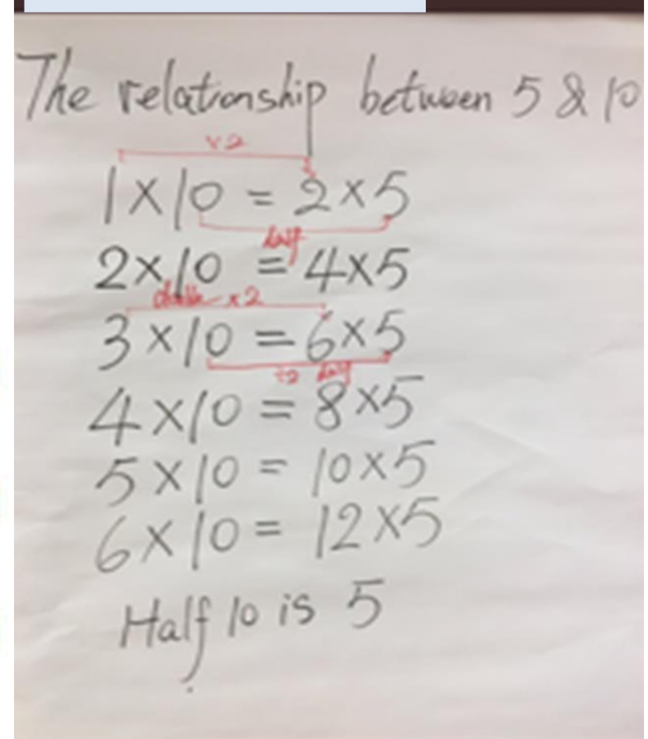
4 × 5 = 10 □ 10

6 □ 5 = 15 + 15

6 □ 5 = 20 □ 10

8 □ 5 = 20 □ 20

8 □ 5 = 60 □ 20



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

Models and stories

Here is an expression involving 12 and 3:

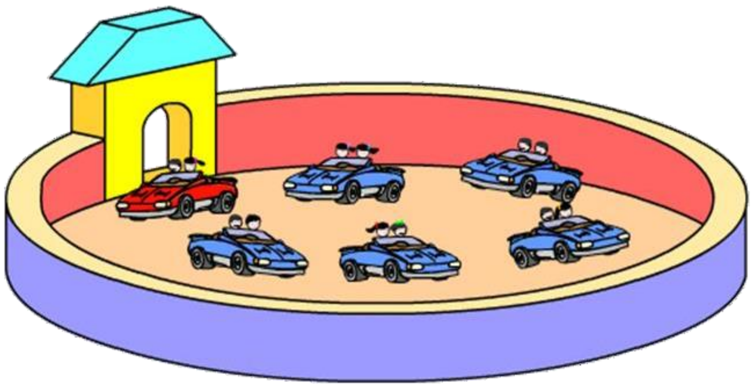
$$12 \times 3$$

Think of
a. some ways of saying "12 × 3"
b. some ways of calculating 12 × 3
c. some diagrams that fit the expression
d. some stories that fit the expression.

*"**What's the same, what's different …***
between the three times table and the six times table?"

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.g. 6 lots of 2 (things)

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

Mulplication number sentence: 6 x 2 = 12 (people)

How many cars? 6 (multiplier)

How many people in each car? 2 (multiplicand)

How many people altogether? 12 (product)

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

4 x 10 minute slots each week – evident in teacher's planning.
(see further pages for ideas for activities)

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

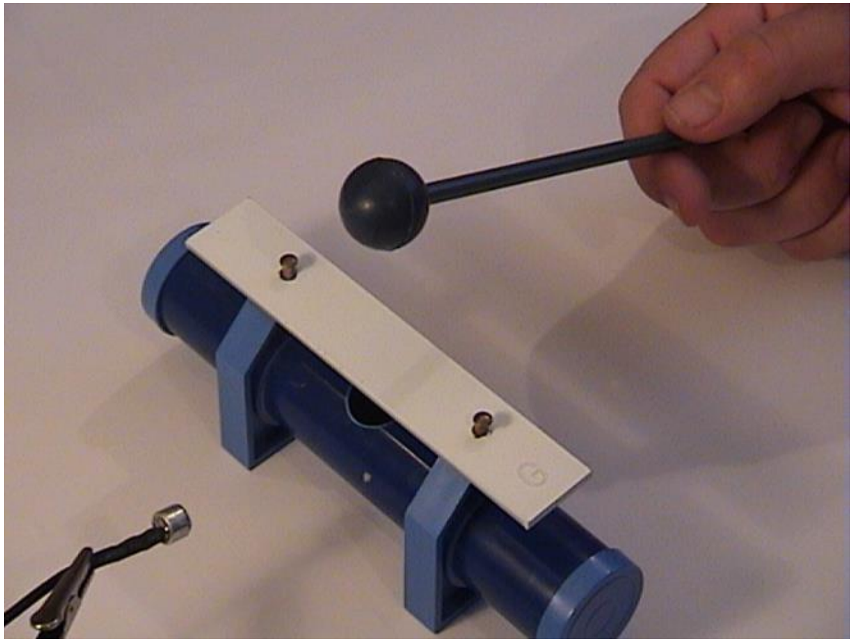
Throw round classroom. Person receiving must say next multiple in times tables.

Or…

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 x 7 Throws to person. Before person catches ball, ret of class must call out the answer.

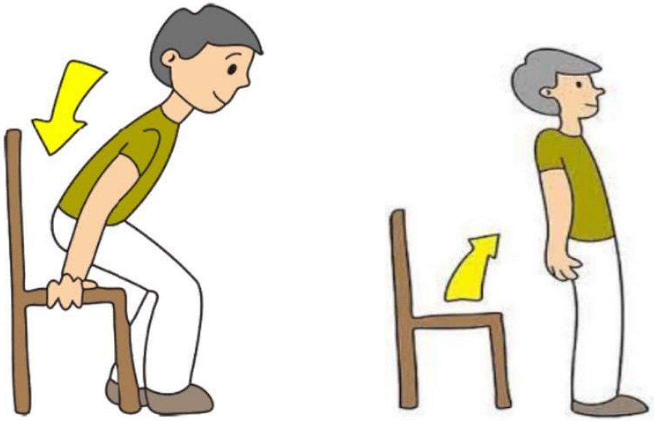


'The Gong'

Count silently in multiples of TT.

When I raise stick, call out number I have stopped at.

STAND UP SIT DOWN Multiplication



- Sit in pairs.
- Stand when pointed to and say next multiple in times table (e.g. 8X 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)

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=yXdHGBfoq fw