Ingol Primary School

Policy for Teaching Times Tables Across the School

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

We are keen to develop a systematic approach with the focus being on ‘little and often’ and fun!

Although we follow the non-statutory guidance issued by the DfE in June 2020, our policy is not intended to be year group specific. Instead, it outlines 7 key steps that teachers should consider when introducing a new times table.

The Seven Key Steps

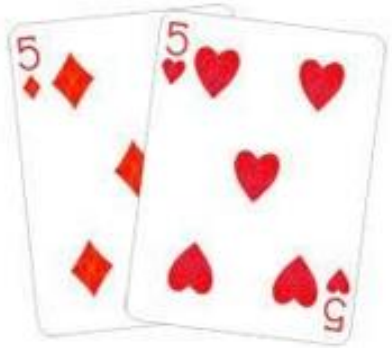
Step 1	Order of introduction
Step 2	Making conceptual links to the real world - display
Step 3	Use of the concrete, pictorial, abstract approach – use of arrays to model
Step 4	Introduce new times table by building it around facts already known
Step 5	Explore patterns in times tables through investigation to develop reasoning, investigation and deeper learning
Step 6	Consistency of how times tables are presented across school, including consistent vocabulary
Step 7	Time-tabled opportunities to practise times tables facts

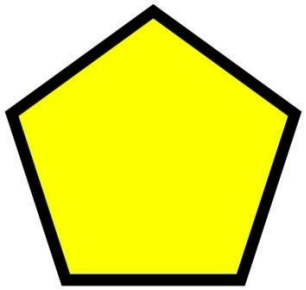
Step 1 - Order of introduction

Year	What should be taught?	Additional comments
Rec	• Introduce concept of x1 (one group of 5 etc) • Solve problems with doubling and halving	
Y1	• Counting in multiples of **2, 5 and 10** • **x1 table (one group of…)**	
Y2	• 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**	
Y3	• 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.
Y4	• 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, x1, x2, x3, x4, x5, x8, x10** • **Continue with square number times tables**	Link x6 to x3. Link x12 to x6
Y5	• 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**	
Y6	• Revise **all times tables (including x0 and x1) to 12 x 12** • Revise **square numbers times table** • Revise **prime numbers**	

Step 2 – Making conceptual links to the real world - display

Make a classroom display





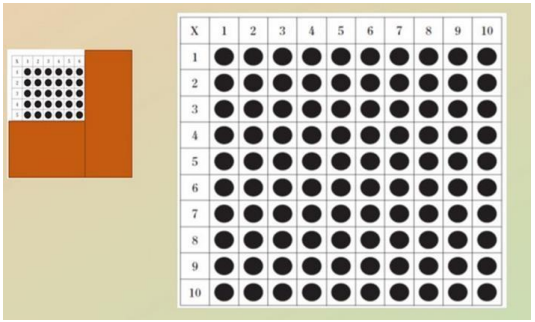
Step 3 – Use of the concrete, pictorial and abstract approach – use of arrays to model

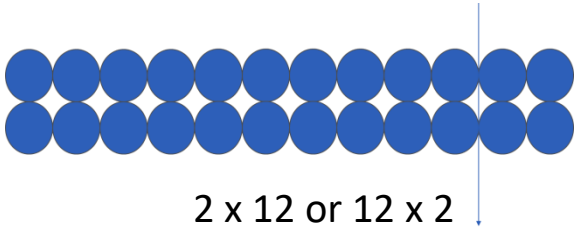
We will be clear which representation we use and explain why to children.

Arrays for representing multiplication

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

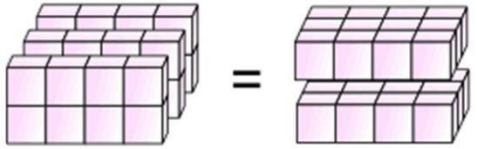
Array Sliders





2 x 12 or 12 x 2

(10 x 2) + (2 x 2)

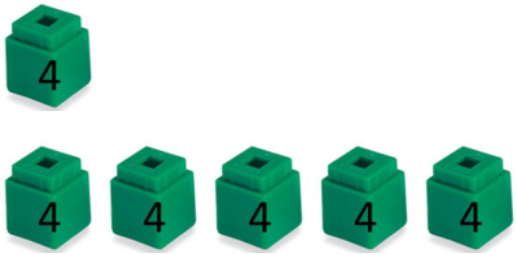


(2 x 4) x 3 2 x (4 x 3)

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

Bar models and unitising arrays

Molly has four books. Harry has five times as many books as Molly. How many books does Harry have?



5 x 4 = 20 (books)

4

4	4	4	4	4

5 x 4 = 20 (books)

Step 4 – Introduce a new times table by building it around facts already known

Do this together. For example:

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

0 x 8 = 0
1 x 8 = 8
2 x 8 = 16
3 x 8 = 24
4 x 8 = 32
5 x 8 = 40
6 x 8 =
7 x 8 =
8 x 8 =
9 x 8 =
10 x 8 = 80
11 x 8 =
12 x 8 =

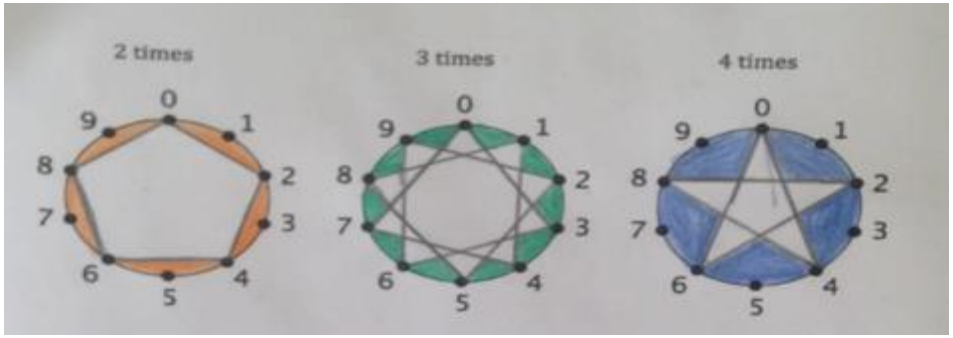
Which facts are left to learn?

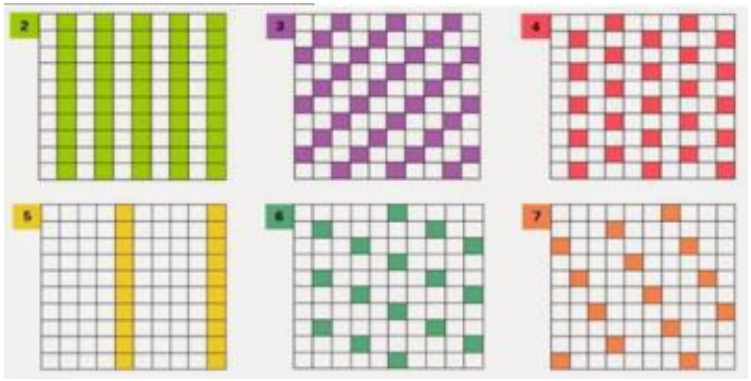
Which facts might help us work out the facts that we don't know?

Step 5 – Explore patterns in times tables through investigation to develop reasoning, investigation and deeper learning.

Provide opportunities which deepen knowledge and understanding and require children to reason, conjecture, predict and explain.

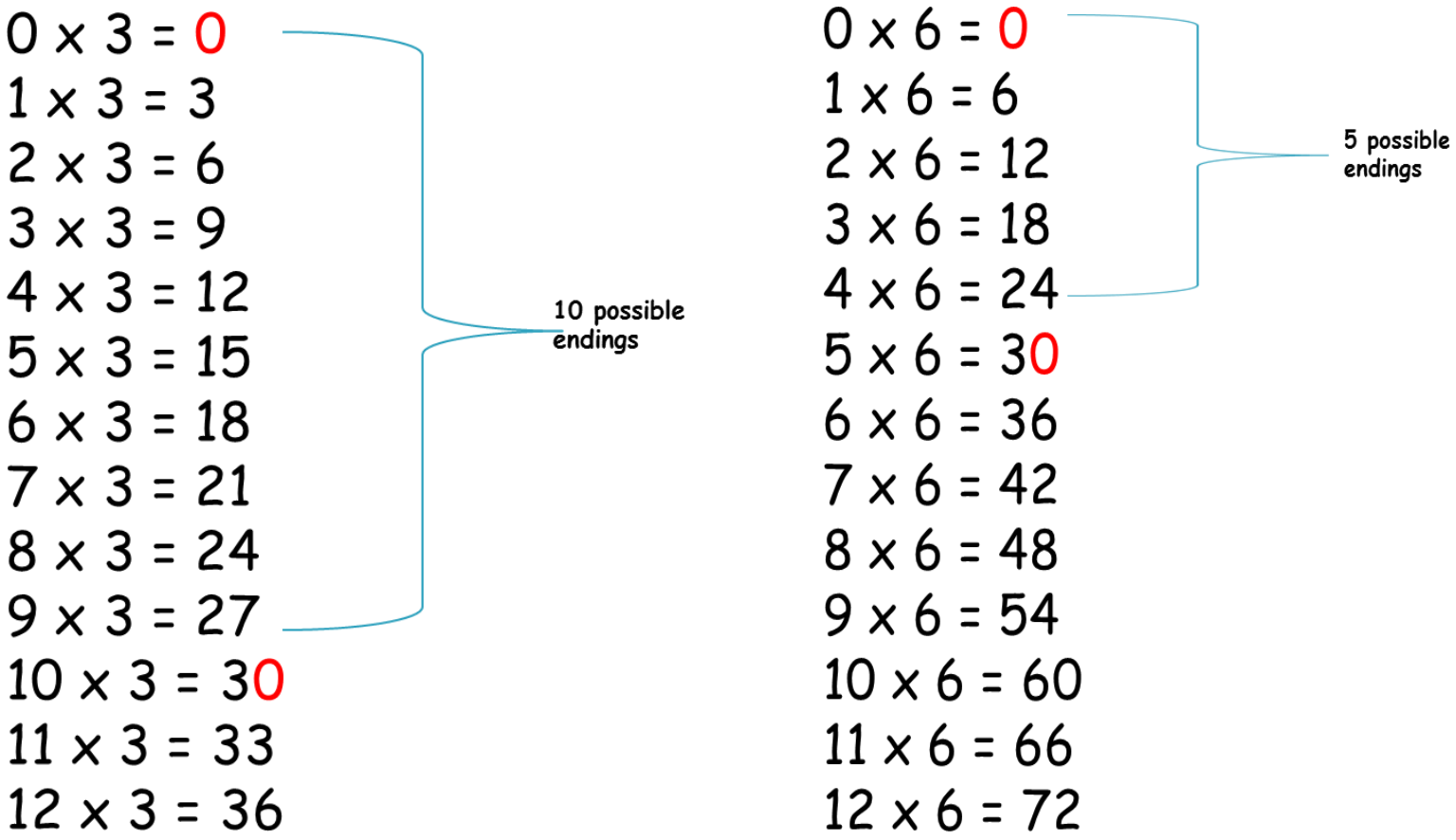
Ensure children engage with 'rich' tasks/investigations linked to times tables which encourage deeper learning, greater levels of reasoning, links to be made and patterns to be discovered.





nrich
Specialists in rich mathematics

This might involve exploring the last digit and making connections between related tables such as x3 and x6.



What do you notice about the digit sum?

We could take it further by investigating the last digits in multiples and looking for patterns and relationships.

x1	0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0
x9	0, 9, 8, 7, 6, 5, 4, 3, 2, 1
x2	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, 2, 0
x4	_ , _, _, _, _, _
x6	_, _, _, _, _, _

Look at these pairs of times tables.

What do you notice?

What relationships can you find?

We can move on to related facts:

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 =

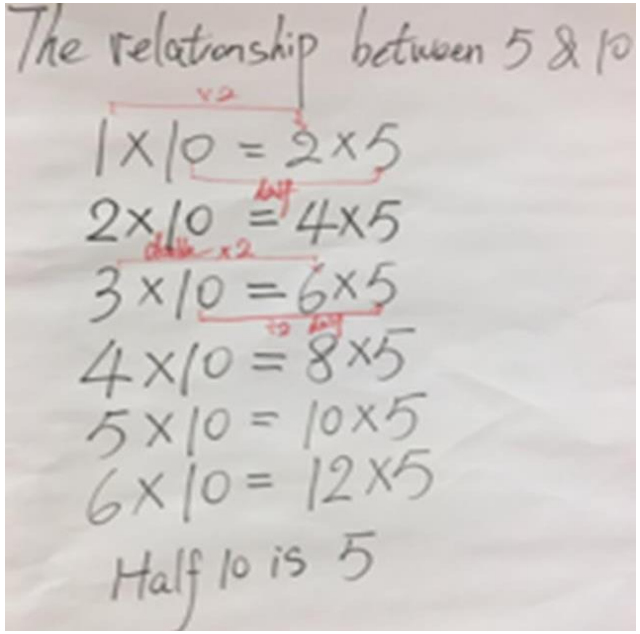
3 × □ + 2 = 20

3 × □ + 2 = 23

3 × □ + 2 = 26

3 × □ + 2 = 29

3 × □ + 2 = 35



6 □ 5 = 20 □ 10

8 □ 5 = 20 □ 20

8 □ 5 = 60 □ 20

4 × 5 = 10 □ 10

6 □ 5 = 15 + 15

We can look at other ways to deepen knowledge and understanding:

Always, Sometimes, Never

-Multiples of 3 are all odd

-If the digit sum of a number is 9, the number is a multiple of 9

-Multiples of 7 are odd

What's the same, what's different . . . between the 3x table and the 6x table?

True or False

12 x 2 = 24 x 4 12 ÷ 2 = 24 ÷ 4 4 x 6 = 6 x 4 4 x 6 = 23

Models and Stories

-Tell me a story about 12 x 3

-Show me 12 x 3 in any way you like

-How else might you tell me 12 x 3?

Step 6 – Consistency of how times tables are represented across the school, including consistent vocabulary

We will introduce the following vocabulary at an age-appropriate level and be consistent throughout school.

The following glossary will be displayed on Working Walls in each classroom.

Array	An ordered collection of counters, cubes or other items in rows and columns.	Multiplicand	In multiplication, a number to be multiplied by another.
Commutative	Numbers can be multiplied in any order.	Partitioning	Splitting a number into its component parts.
Dividend	In division, the number that is divided.	Product	The result of multiplying one number by another.
Divisor	In division, the number by which another is divided.	Quotient	The result of a division.
Exchange	Change a number or expression for another of an equal value.	Remainder	The amount left over after a division when the divisor is not a factor of the dividend.
Factor	A number that multiplies with another to make a factor.	Scaling	Enlarging or reducing a number by a given amount, called the scale factor.

Step 7 – Timetabled opportunities to practise times tables facts

The philosophy is *'little but often'* with a minimum 5 minutes per day devoted to practising times tables.

Staff in Y2, Y3 and Y4 will focus on one times table per week with a timed test taking place on Friday.

Staff in Y5 and Y6 will look to secure and maintain fluency in all times tables with a timed test taking place on Friday.

Learning by rote

We believe children learn their times tables best through a mixture of rote learning and the mastery approach. Staff will display a multiplication table square in each classroom and use Rolling Numbers to practise times tables through song.

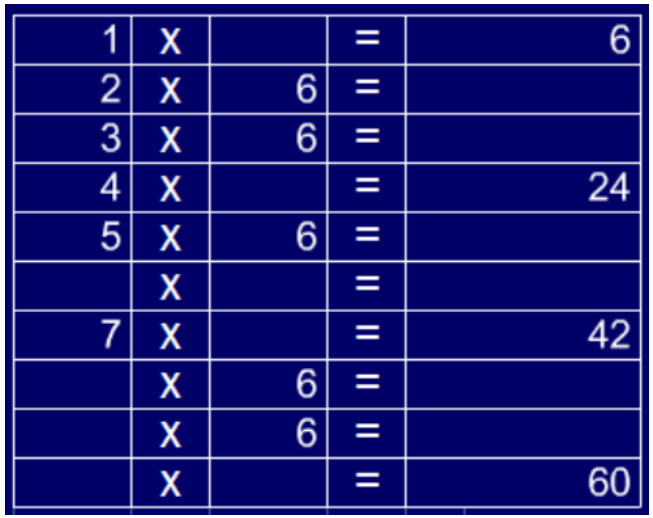
Children will also be encouraged to play Times Tables Rock Stars in class and at home, with regular competitions encouraging participation.

Learning through mastery and reasoning

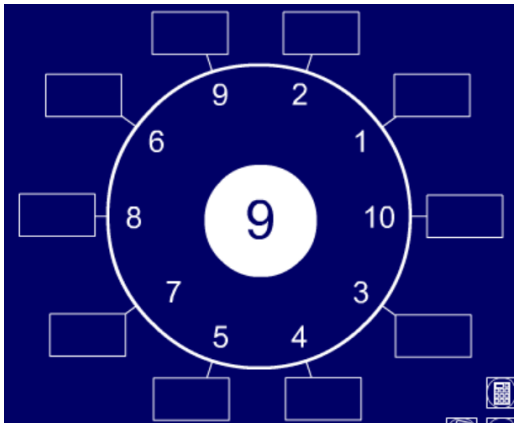
The following pages contain some ideas, games and resources which can be used and adapted by staff to promote times tables learning:

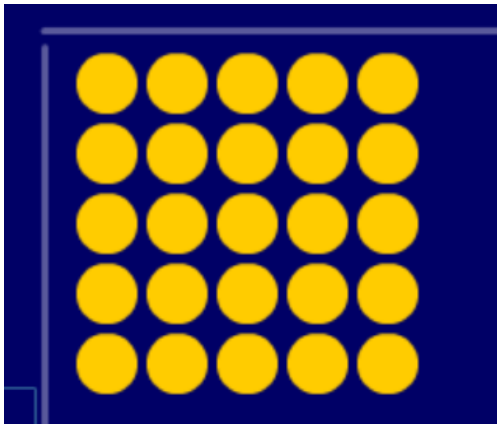
ITPs are a simple way of investigating multiplication patterns and exploring repeated addition, distributivity and commutativity.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100



1	X		=	6
2	X	6	=	
3	X	6	=	
4	X		=	24
5	X	6	=	
	X		=	
7	X		=	42
	X	6	=	
	X	6	=	
	X		=	60





Terror Tables is a game which encourages children to add, subtract, double and halve to find multiples.

CAN YOU DETONATE THE BOMB
BEFORE IT EXPLODES?

TRY TO COMPLETE YOUR TABLES
IN UNDER 2 MINUTES

ELSE...

CLICK TO START

The Pendulum

Split the class into two teams. Each team must call out the next given multiple.

Forwards and backwards.

Start at different points.

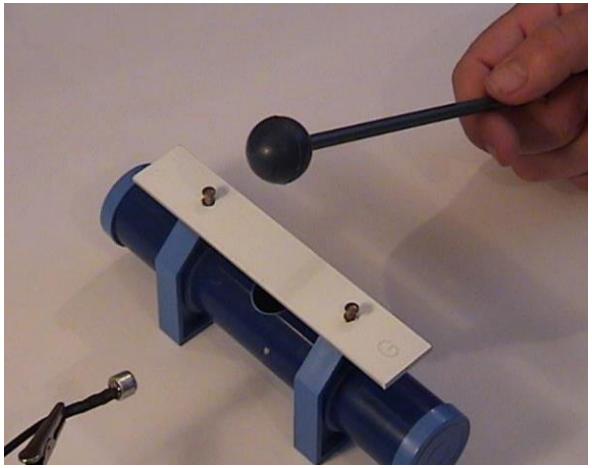
Quiet and loud ie 3x can be heard in 6x so do one quiet and the other loud.

Beach Ball

Throw the beach ball round the room. The child receiving says the next multiple.

OR pass around the room whilst counting silently in head. Teacher says " back to me" and receives the ball. When teacher receives the ball, the children call out the next multiple.

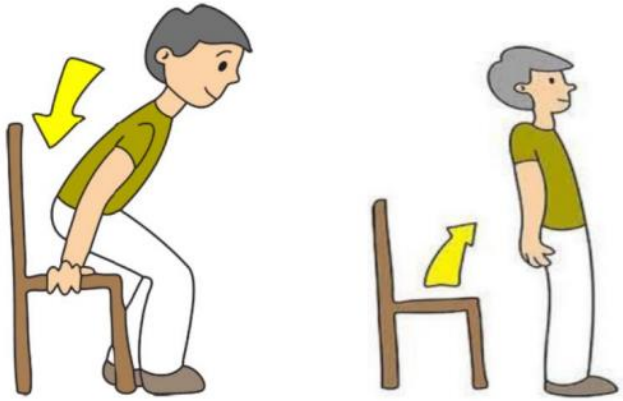
OR teacher calls out a question ie 7 x 3 and throws to a child. Before the child catches the ball, the rest of the class shout the answer.



The Gong

The children count silently in a given multiple. When the teacher bangs the instrument, the children call out the number s/he has stopped at.

Stand Up, Sit Down



Children sit in pairs then stand when they are pointed at and say the next given multiple ie 8x table.

Repeat but without pointing. Instead, the children have to remember the order they stood in.

Ask questons such as:

-stand up if your number was 8 more than 24

-stand up if your number was even

-stand up if you had a square number

-stand up if your number was 16 less than 32

Target Boards

10	8	5	18	4
9	20	13	3	6
16	12	15	7	19
1	2	17	11	14

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

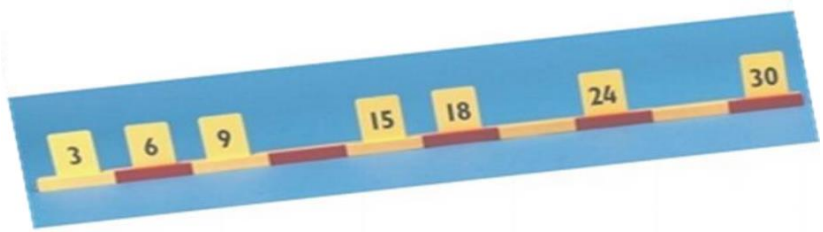
Which numbers are factors of 20? How do you know?

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?

Labelled Counting Stick



A suggested script for the 3x table (adapt as required):

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 9. 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 three (repeat steps 1-9)

Step 10: Everybody touch your nose. That's 15. Touch your nose.

Step 11: Now everybody needs to help me. There is one number I always forget. It's 24. What number do I always forget? (Repeat steps 1-11) Begin to remove the cards as children become more confident with remembering.

3x a number is called the key. Double it for 6x and triple it for 9x.

Policy for teaching times tables across the school.