Fressingfield Counting and Times Tables Policy

Introduction

Times tables are at the heart of mental arithmetic, which in itself helps children's understanding and ability when working with number, both in school and in the wider world. Counting, eg in 2s, 5s or 10s, is the precursor to this, and a foundation for effective tables learning. Once children have learned their times tables by heart, they are then able to work far more confidently through a range of more advanced calculations. At Fressingfield, we believe that, through different engaging, interactive, visual and oral techniques, and regular practice, most children can achieve the full times tables knowledge by the time they enter Year 5.

Aims

- To raise the profile of the teaching of times tables and to raise the overall knowledge of times tables facts across the whole school
- To explain the expected practices, to ensure children learn their tables
- To ensure continuity in practices and progression in counting and times tables
- To ensure the successful learning and teaching within Fressingfield Primary
- To develop our language in maths, to include specific maths language as children progress through the school (eg multiplier, multiplicand, factor)

National Curriculum Times Tables Expectations

Year 1	• Count in multiples of 2, 5 and 10. • Recall and use all doubles to 10 and corresponding halves.
Year 2	• Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.
Year 3	• Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables.
Year 4	• Recall and use multiplication and division facts for multiplication tables up to 12x12.
Year 5	• Revision of all times tables and division facts up to 12x12.
Year 6	• Revision of all times tables and division facts up to 12x12.

When times tables are introduced, teaching staff are aware of the 7 key steps, which show progression. These are not age group dependent, but build upon prior knowledge. These steps are:

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: Counting and Times Tables

Nursery	Singing and counting nursery rhymes to 10, and counting down from 5
Reception	Counting forwards and backwards in 1s to 20 starting from 1.
	Counting forwards in 2s, 5s and 10s to 20.
Year 1 Emerging	Count forwards in 1s, 2s, 5s and 10s up to 50 starting at any number.
	Count backwards in 1s, 2s, 5s and 10s up to 50 from any number.
Year 1 Expected	Count forwards in 1s, 2s, 5s and 10s up to 100 starting at any number.
	Count backwards in 1s, 2s, 5s and 10s up to 100 from any number.
Year 2 Emerging	Count forward in steps of 2, 10 and 5 from any number up to 100.
	Count backward in steps of 2, 10 and 5 from any number near to 100.
Year 2 Expected	Count forward in steps of 2, 3, 10 and 5 from any number up to 100.
	Count backward in steps of 2, 3, 10 and 5 from any number near to 100.
Year 3 Emerging	Count from 0 in multiples of 4, 50 and 100.
	Answer multiplication and division facts for the 2, 3, 4, 5, 10, 11 tables very quickly.

Year 3 Expected	Answer multiplication and division facts for the 2, 3, 4, 5, 8, 10, 11 times tables very quickly.
Year 4 Emerging	Count in multiples of 6, 7, 9, 25 and 1000.
	Count up and down in hundredths.
Year 4 Expected	Answer multiplication and division facts for multiplication tables up to 12x12 very quickly.
	Count backwards through zero and understand that -2 is greater than -3.
Year 5 Emerging	Count forwards and backwards in steps of 100 and 1,000 from any number up to 1,000,000.
	Count forwards and backwards with positive and negative whole numbers through zero.
Year 5 Expected	Count forwards and backwards in steps of 1,000 and 100,000 from any number up to 1,000,000.
Year 6	Consolidating learning from previous year groups.

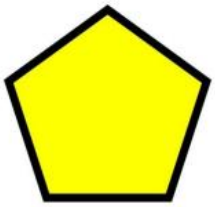
The above ties in with our maths assessment grids.

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

From Early Years upwards, we know it is important to use pictorial links to represent multiplication.





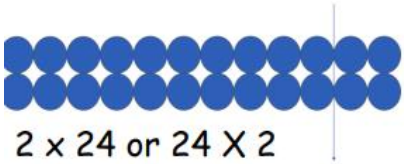
Step 3 - Use of the concrete, pictorial, abstract approach; use of arrays to model

We are clear about which representations we use and why.

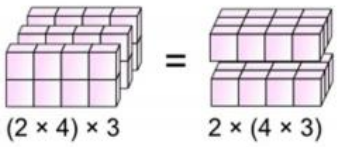
Arrays for representing multiplication

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!

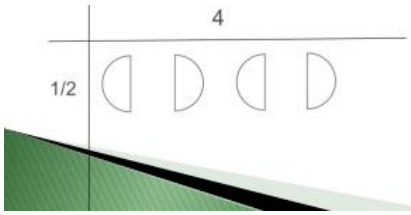


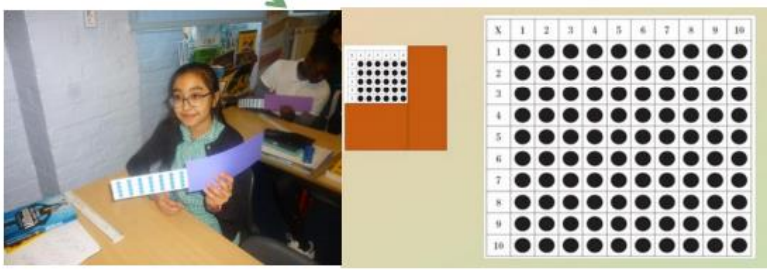
2 x 24 or 24 X 2

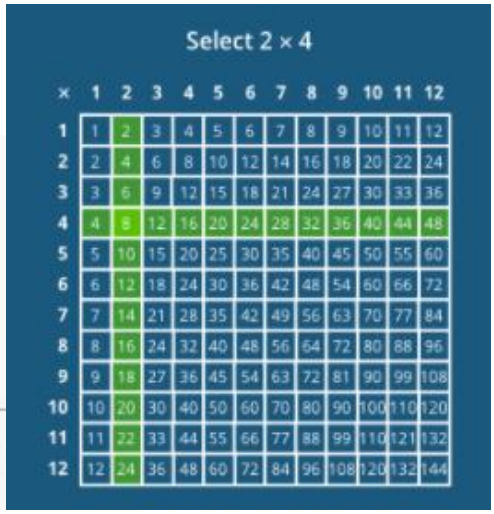


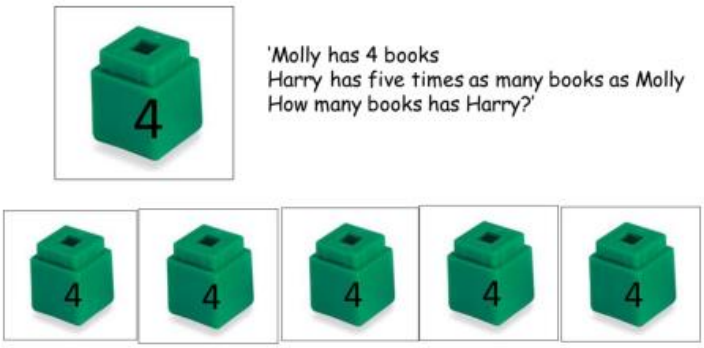
12 x 2 = (4 x 3) x 2 = 24

(10 x 2) + (2 x 2)

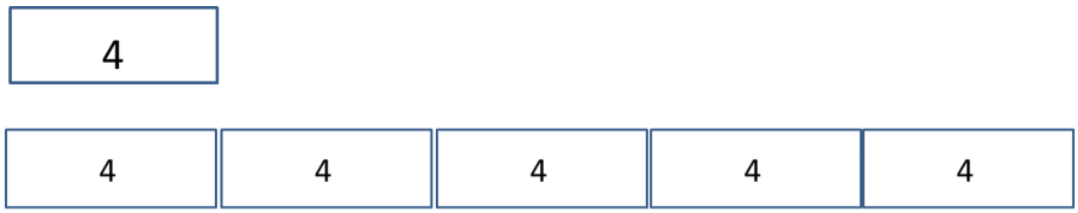








5 x 4 = 20 (books)



5 x 4 = 20 (books)

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

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?

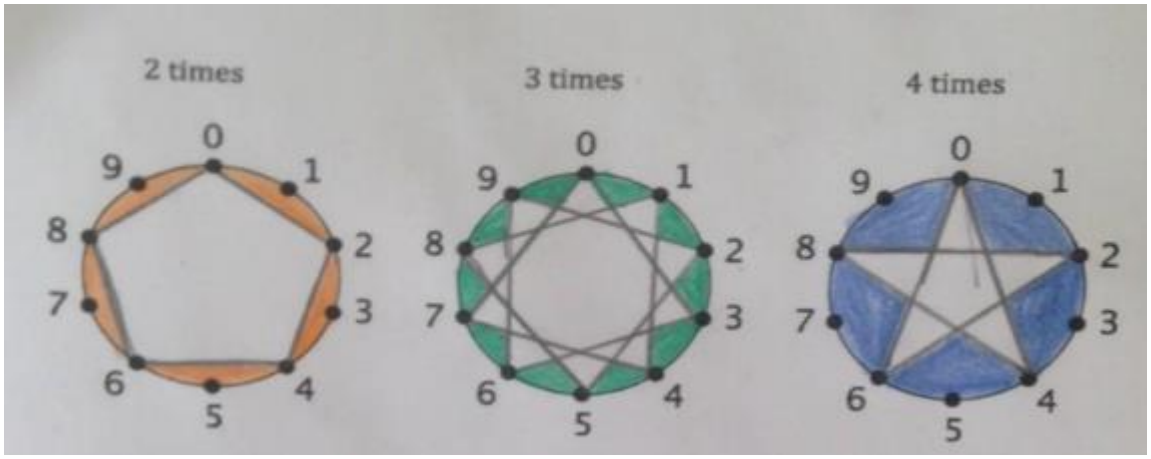
0 x 8 = 0
1 x 8 = 8
2 x 8 = 16
3 x 8 = 24
4 x 8 = 32
5 x 8 = 40
6 x 8 =
7 x 8 =
8 x 8 =
9 x 8 =
10 x 8 = 80
11 x 8 =
12 x 8 =

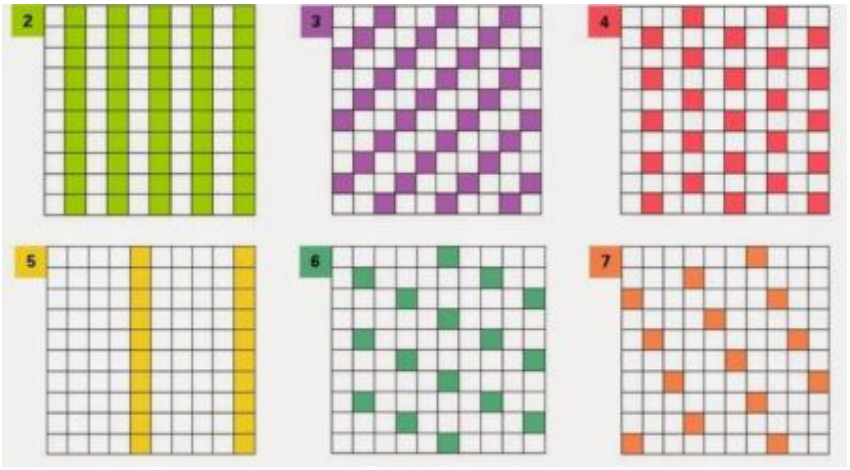
Which facts are left to learn?

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

Step 5- take time to explore the patterns of each times table; provide opportunities which deepen knowledge and understanding and require children to reason, conjecture, predict and explain

We 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 digits in multiples

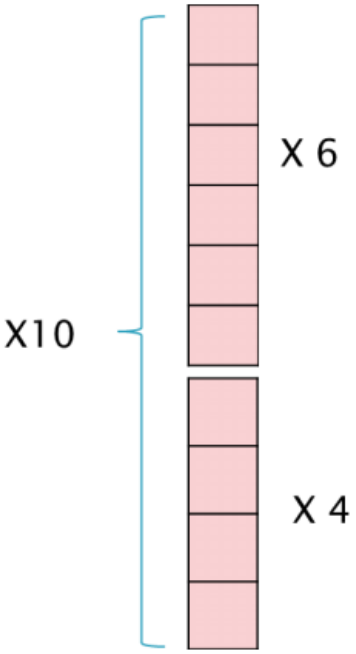
X 1 0,1,2,3,4,5,6,7,8,9,0
X 9 0,9,8,7,6,5,4,3,2,1,9

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?

4 × 5 = 10 □ 10

6 □ 5 = 15 + 15

6 □ 5 = 20 □ 10

8 □ 5 = 20 □ 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

Which number doesn't belong? Explain why.

1. 36, 12, 34, 60
2. 80, 640, 64, 18

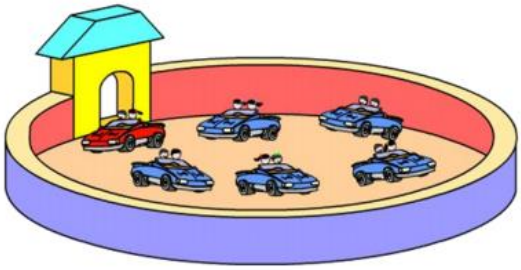
"What's the same, what's different ...
between the three times table and the six times table?"

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

4 × 6 = 23 **4 × 6 = 6 × 4** **12 ÷ 2 = 24 ÷ 4** **12 × 2 = 24 × 4**

Step 6 – we ensure consistency of language

We ensure we are clear about use of language 'multiplier' and 'multiplicand'. We need to make sure we identify each within a multiplication problem and 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 – structured opportunities for children to practise their counting and tables each week

This may be done first thing in the afternoon (eg in Times Tables Practice Books) or as a Warm Up before the main lesson. It might be through short interactive games or activities (eg times tables bingo or beach ball games), or partner-based counting games.

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…

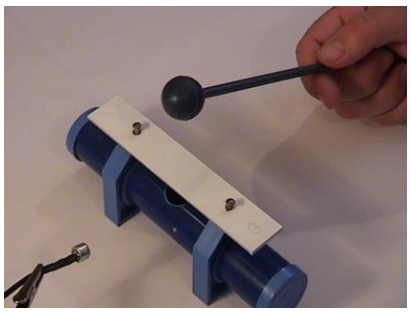
Pass around room. Count silently in head. Teacher says 'back to me'. Ball returned to teacher. When teacher receives, children call out loud the next multiple.

Or…

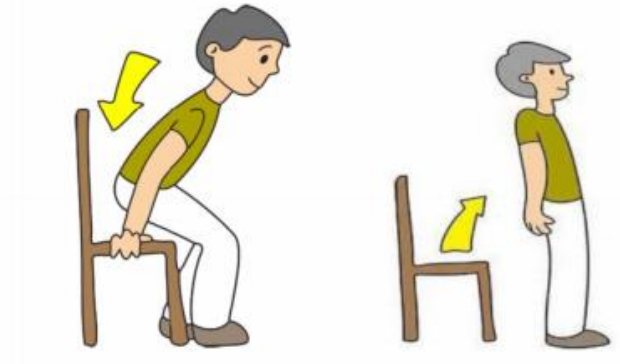
Teacher calls out question e.g. 3 x 7 Throws to person. Before person catches ball, ret of class must call out the answer.

<u>The Gong</u>

Counting silently in times tables, to the beat. "When I raise the gong, call out the 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)

<u>"Don't say the last number"</u>

Children work in pairs; one child startsat the beginning and says 1, 2 or 3 answers in the times table (eg 8 or 8,16 or 8,16,24). Then the other continues with 1, 2 or 3 answers (eg 16, 24, 32). This continues. The winner is the child who DOES NOT say the last multiple (ie 96).

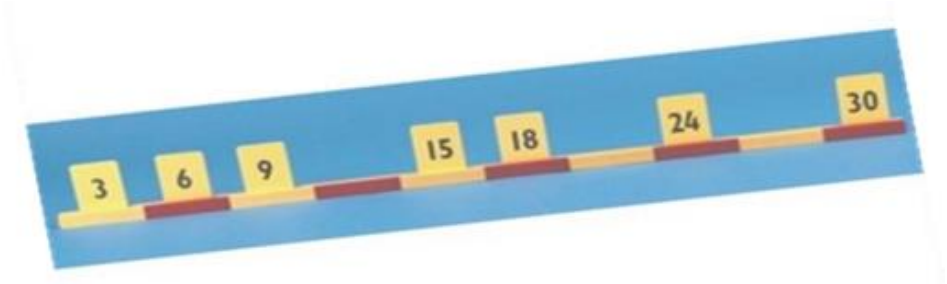
Target boards

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

e.g

- 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



There are dozens of different activities to do with a counting stick, and these play an important role in both counting AND learning times tables. Post-its or visual aids can add numbers or they can be blank. Teachers emphasise starting in different places, and working backwards, as well as forwards. Counting sticks can also be used whilst held in a vertical position.

Suggested script for using the counting stick to teach or introduce a times table:

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=yXdHGBfoqfw

We also use Purple Maths to reinforce times tables and counting skills. Good reinforcement activities include Table Toons, Monster Multiplication, Bond Bubbles and 2Race. In addition to Purple Mash, we also have 10ticks.com, which we encourage children to use at home, and provide incentives and rewards for regular practice.

Testing and Assessment

We use termly PUMA tests to assess children's learning. We may also carry out informal assessments during the school year.

Homework

Homework to practise and reinforce counting and tables is regularly given to children, both online and in their homework books.

Differentiation

It is expected that children will be at varying stages in their counting/times tables journey. In KS2, it is very important that less able children have extra support in developing an understanding of the concept of 'lots of' before moving on to rote learning of any times tables. If children have not yet achieved the target tables for their year group, they need to work on previous tables first. Once children know their tables confidently (including divide facts), they are extended through related number facts and real-life problem solving in context.

Times tables should be on display/at hand for children

Class teachers may use learning walls and/or space in the front of maths exercise books, eg for a times tables grid, or may have access to a laminated aid. Teachers ensure children have investigated these and know how to use them.

Application of times tables in calculation

Children's growing understanding of times tables is only relevant if they are aware of their application in both calculations and real-life. To do this, children need to work towards using recall of times tables when needed in calculations.

Related documents

- The National Curriculum
- Mathematics Policy
- Assessment Policy
- School Curriculum Policy
- Inclusion Policy
- Equality Policy

SP/Dec20