



Key Stage 1

MULTIPLICATION

X

Developing Conceptual Understanding:
CONTEXTUAL - LINGUISTIC - PRACTICAL - CONCRETE

- **'Skip-Counting':**

Give lots of practical examples where children can begin to 'skip-count' - initially in twos (eg two frogs on each lily pad - how many frogs on three lily pads?)

'2, 4, 6' and develop correspondence by checking using normal counting

Count practically in 'pairs' - eg socks, gloves to support learning the 2x table facts



NB: children need to be confident in skip counting before moving on to learning times tables

- **'Lots of':**

Progress to develop the concept and language of 'lots of':

Each lily pad above is one 'lot of' two frogs, so this picture represents 'three lots of two frogs' which equals six frogs altogether - leading to $3 \times 2 = 6$.

Encourage the children to read aloud the 'x' symbol with the words 'lots of' (not just using the meaningless term 'times').

- **Counting in multiples:**

Count in multiples supported by a variety of concrete objects illustrating the equal groups



'2,4,6,8' or '4 lots of 2 = 8'



'5,10,15,20' or '4 lots of 5 = 20'

Progression in Year 1:

Count in **twos** - use pairs; reinforce even/odd numbers; skip count on washing-lines, number lines, bead strings; hop-scotch along number-tracks
 Count in **tens** - use Numicon; straws; bead strings; fingers on both hands etc
 Count in **fives** - as above, but include fingers on one hand and introduce tally marks

Progression in Year 2:

2x table
 10x table
 5x table
 Count in 3's

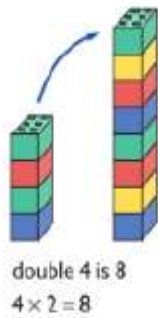
- **Count aloud ('Chant') in multiples:**



Learn the sequences of multiples for 2's, then 10's, then 5's off by heart by chanting the multiples (initially skip-counting (Y1) then as times tables number-sentences (Y2)).

- **Doubling:**

Practically double numbers.....



leading to recording using pictures.....

Double 4 is 8



Note that doubling is beginning to use the concept of 'scaling' (eg x2 as 'doubling' or 'two times bigger') - support this idea by using lots of practical and visual models like Numicon, Cuisinaire, multi-link etc

Progression in Year 1:

- Doubles within 10
- Double multiples of 10 within 100

Progression in Year 2:

- Doubles within 20
- Double multiples of 5 within 100

- **Repeated Addition:**

Use different objects to add equal groups:



$3 + 3 + 3 = 9$ altogether
3 lots of 3 = 9

Is the same as:



$5 + 5 + 5 = 15$ altogether
3 lots of 5 = 15

- **Balance beams** with weights to model equivalence

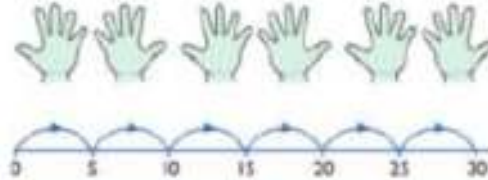


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**Developing Conceptual Understanding:
PICTORIAL - MENTAL**

- **Pictorial representations:**
Extend counting activities to pictorial representations, including number lines, to continue to support counting in multiples.



For all of 2's, 10's and 5's, illustrate counting on a hundred square in these multiples and noting any patterns. Children should be supported in developing the ability to identify/describe/reason about/explain any patterns they see.

- **Repeated Addition:**
Model systematic recording....

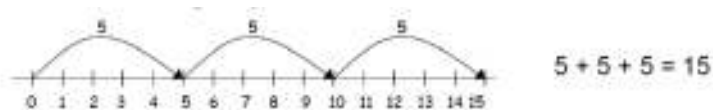
There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?



Write repeated addition sentences to describe objects and pictures:



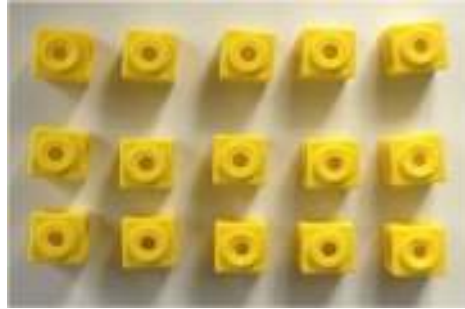
Leading to 'skip-counting' in multiples on number lines.....



- **Arrays:**
Create arrays practically using counters/cubes/Cuisinaire rods to show multiplication sentences:



'4 lots of 6' or '6 lots of 4'



'3 lots of 5' or '5 lots of 3'

- **Counting Sticks:**
Use to build tables knowledge:



- **JUST KNOW IT! YEAR 1**
Count in twos, tens and fives - forwards and backwards
Doubles and halves of numbers up to 10 and double multiples of 10
- **JUST KNOW IT! YEAR 2**
Recall and use 2x, 10x, 5x tables facts in x and ÷
Recognise odd and even numbers
Count in 3's
Doubles and halves of numbers up to 20 and double multiples of 5

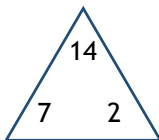
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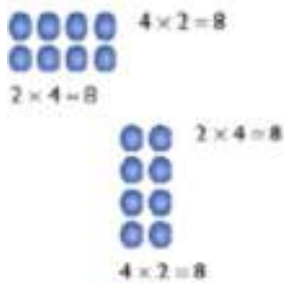
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**Abstract Recording:
INFORMAL JOTTINGS**

- **Word problems:**
There are 3 sweets in a bag. How many sweets would there be in 5 bags?
Draw the 5 bags, each with 3 sweets in. Count (or skip-count in 3's) to find the answer:
= 15 sweets
- **Fact Family Triangles:**
To illustrate and support the learning of multiplication and associated division facts, the Triangle jotting can be useful - as here, to show 7×2 (or 2×7) and/or $14 \div 7$ (or $14 \div 2$):



- **Arrays:**
Draw arrays in different rotations to find commutative multiplication sentences:



Note: 2 lots of 4 is the same as $4 + 4$ or double 4 = 8
 4 lots of 2 is the same as $2 + 2 + 2 + 2 = 8$

Leading to using arrays to write multiplication sentences derived from repeated addition:



$$5 + 5 + 5 = 15$$

$$3 + 3 + 3 + 3 + 3 = 15$$

$$\text{So, } 3 \times 5 = 15 \text{ and } 5 \times 3 = 15$$

Introduce the language of 'rows' and 'columns' for arrays and tables (linked to databases in the Computing curriculum).

Using the Bar Model

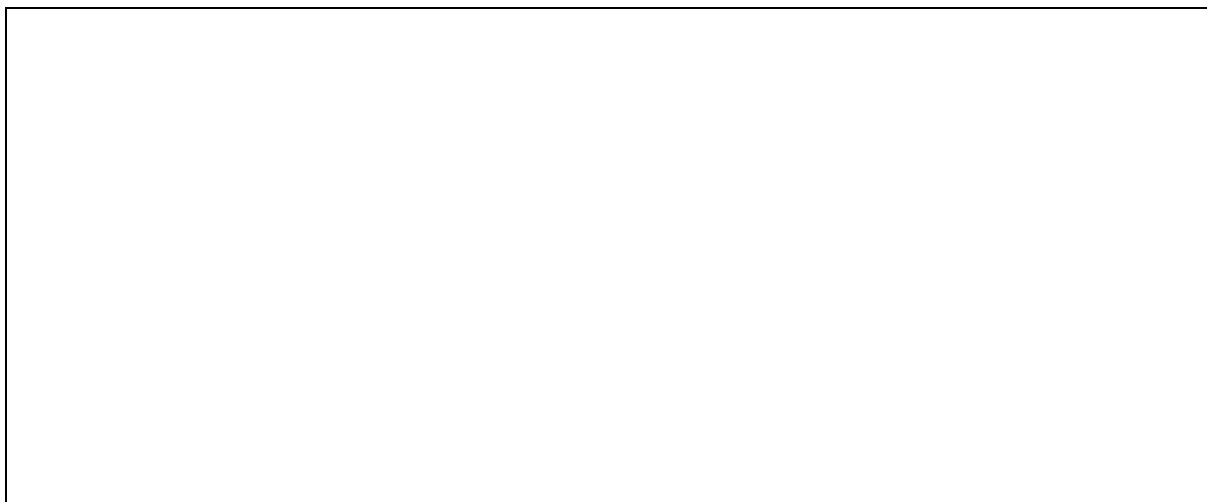
5×3 can be shown as

15				
3	3	3	3	3

Or

3×5

15		
5	5	5



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**Abstract Recording:
OUR WRITTEN METHOD**

- **Written recording alongside practical work:**

$$7 \times 2 = \square \qquad \square = 2 \times 7$$

Be sure to vary the position of the 'answer' - it should not always be after the = sign!

- **Fact families:**

$$7 \times \square = 14 \qquad 14 = 2 \times \square$$

Extend missing number questions into links with division facts (Year 2).

- **Doubling:**

The easiest way to double is to use repeated addition - applying column, partitioning or number line addition strategies (as appropriate to the ability/confidence level of the child):

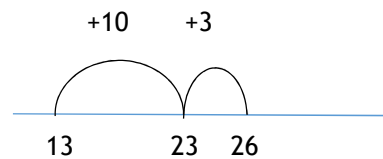
eg Double 13 = $2 \times 13 = 13 + 13$

$$\begin{array}{r} \text{T O} \\ 13 \\ +13 \\ \hline 26 \end{array}$$

OR

$$\begin{array}{c} 13 \\ / \quad \backslash \\ 10 \quad 3 \end{array} + \begin{array}{c} 13 \\ / \quad \backslash \\ 10 \quad 3 \end{array} = 20 + 6 = 26$$

OR



- **Multiplying by 3:**

In KS1 SATs, children are not expected to formally multiply by 3 (or apply 3x tables knowledge directly). However, they can be asked to work out 3 lots of a number, so need to be confidently able to do this through applied repeated addition:

eg 24×3

They need to know that this is "three lots of 24" - which is the same as $24 + 24 + 24$

So can be calculated as:

$$\begin{array}{r} 20 \ 4 \\ 20 \ 4 \\ + 20 \ 4 \\ \hline 60+12 = 72 \end{array}$$