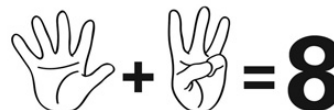
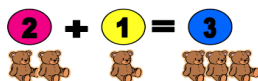
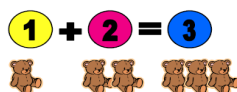


Addition Progression

We will teach number sentences such as $8+5=13$ throughout the school

1. Using objects and fingers



This will include the use of a range of concrete visual apparatus such as numicon, counters, cuisenaire rods and dienes etc

2. Using number lines:

$$8 + 5 = 13$$

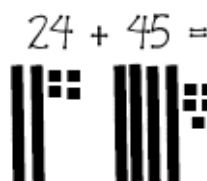


3. Counting the tens and then the units

So children count the tens first = 60

Then units = 9

When the tens or hundreds barrier is broken the pupils will be expected to exchange



4. Counting tens and units with jottings

$$\begin{aligned} \text{e.g. } 24 + 45 &\Rightarrow 20 + 40 = 60 \\ &\quad 4 + 5 = 9 \\ &\quad 60 + 9 = 69 \end{aligned}$$

5. Vertical method

$$\begin{array}{r} 67 \\ + 22 \\ \hline 89 \end{array} \quad \begin{array}{r} 625 \\ + 53 \\ \hline 678 \end{array}$$

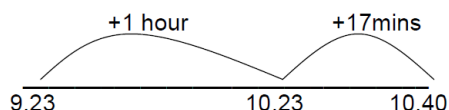
6. Vertical method - crossing the barrier

$$\begin{array}{r} 783 \\ + 42 \\ \hline 825 \\ 1 \end{array}$$

$$\begin{array}{r} 367 \\ + 85 \\ \hline 452 \\ 11 \end{array}$$

$$\begin{array}{r} 3587 \\ + 675 \\ \hline 4262 \\ 111 \end{array}$$

7. Adding time:



Please avoid columns as this leads to problems and answers such as 8.75pm and 25.10.

Subtraction Progression



We will teach number sentences such as $7-4=3$ throughout the school

1. Using objects and fingers



Three teddies **take away** two teddies leaves one teddy

2. 1 less - using objects if needed

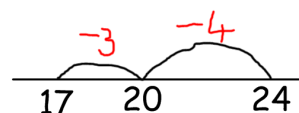


This will include the use of a range of concrete visual apparatus such as numicon, counters, cuisenaire rods and dienes etc

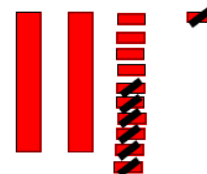
3. Counting back on a number line



$$24 - 7 = 17$$

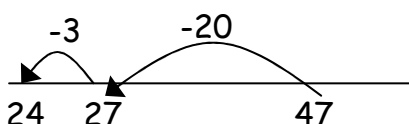


4. Cross tens barrier by exchanging (using Dienes/ Place value counters)



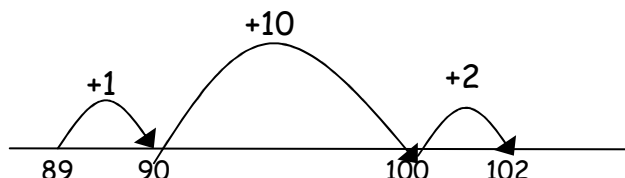
5. Using a number line to back

$$47 - 23 = 24$$



6. Using a number line to count on

$$102 - 89 = 13$$



7. Standard written methods - including crossing barriers

$$\begin{array}{r} 79 \\ - 56 \\ \hline 23 \end{array}$$

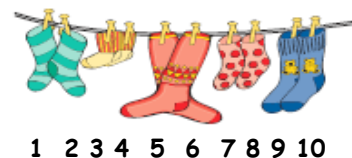
$$\begin{array}{r} 6\cancel{7}^{12} \\ - 56 \\ \hline 16 \end{array}$$

$$\begin{array}{r} 5\cancel{6}^{13} \quad . \quad 5 \\ - 7 \quad . \quad 2 \\ \hline 56 \quad . \quad 3 \end{array}$$

Multiplication Progression

We will teach number sentences such as $3 \times 2 = 6$ throughout the school
The times tables that should be known at each stage are in our maths progression document

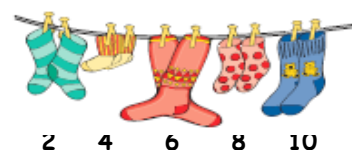
1. Count repeated groups of the same size



2. Repeated addition

$$2 + 2 + 2 + 2 + 2 = 10$$

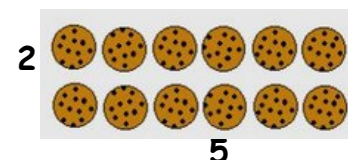
Leading to $5 \times 2 = 10$



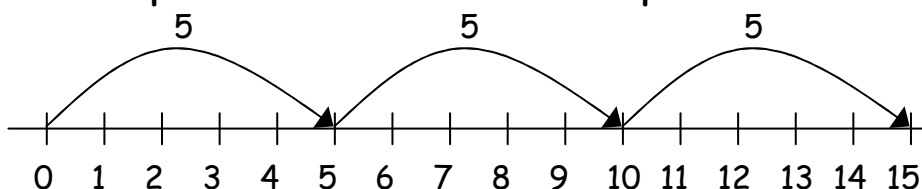
3. Understanding multiplication through arrays:

So $2 \times 5 = 10$

And $5 \times 2 = 10$



4. Express multiplication on a number line as repeated addition:



So $3 \times 5 = 15$

5. Using arrays to understand related multiplication facts:



$9 \times 4 = 36$	$4 \times 9 = 36$
$36 \div 4 = 9$	$36 \div 9 = 4$

6. Grid Methods

×	30	5
7	210	35

$210 + 35 = 245$

×	30	5
20	600	100
6	180	30

$600 + 100 = 700$
 $180 + 30 = 210$
 $700 + 210 = 910$

7. Standard written methods - short and long multiplication

$$\begin{array}{r} 32 \\ \times 24 \\ \hline 8 \quad (4 \times 2) \\ 120 \quad (4 \times 30) \\ 40 \quad (20 \times 2) \\ 600 \quad (20 \times 30) \\ \hline 768 \end{array}$$

2741 \times 6 becomes

$$\begin{array}{r} 2741 \\ \times 6 \\ \hline 16446 \end{array}$$

Answer: 16 446

124 \times 26 becomes

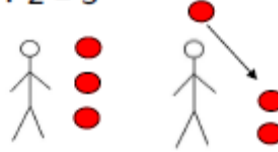
$$\begin{array}{r} 124 \\ \times 26 \\ \hline 744 \\ 2480 \\ \hline 3224 \end{array}$$

Answer: 3224

Division Progression

1. With objects - sharing

$$6 \div 2 = 3$$



2. With objects - share into equal groups

How many 4's in 12

$$12 \div 4 = 3$$

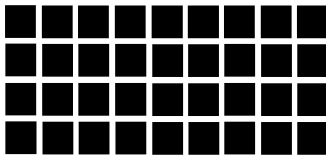


3. Grouping with remainders

How many 3's in 10? $10 \div 3 = 3 \text{ r } 1$



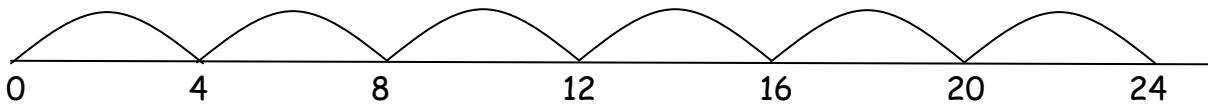
4. Arrays



$$36 \div 4 = 9 \quad 36 \div 9 = 4$$

5. Number lines

$$24 \div 4 = 6$$



6. Short division

$$\begin{array}{r} 0 \ 3 \ 5 \\ 5 \overline{) 1 \ 7 \ 5} \end{array}$$

$$\begin{array}{r} 1 \ 3 \ 7 \ \text{r} \ 5 \\ 7 \overline{) 9 \ 6 \ 4} \end{array}$$

$$\begin{array}{r} 2 \ 8 \ 7 \ 5 \\ 8 \overline{) 2 \ 3 \ 7 \ 0 \ 4 \ 0} \end{array}$$

7. Long division:

$$\begin{array}{r} 2 \ 8 \ \frac{4}{5} \\ 1 \ 5 \overline{) 4 \ 3 \ 2} \\ \underline{3 \ 0 \ 0} \quad 15 \times 20 \\ 1 \ 3 \ 2 \\ \underline{1 \ 2 \ 0} \quad 15 \times 8 \\ 1 \ 2 \end{array}$$

$$\frac{12}{15} = \frac{4}{5}$$

$$\begin{array}{r} 2 \ 8 \ \text{r} \ 12 \\ 1 \ 5 \overline{) 4 \ 3 \ 2} \\ \underline{3 \ 0 \ 0} \\ 1 \ 3 \ 2 \\ \underline{1 \ 2 \ 0} \\ 1 \ 2 \end{array}$$

$$\begin{array}{r} 2 \ 8 \cdot 8 \\ 1 \ 5 \overline{) 4 \ 3 \ 2 \cdot 0} \\ \underline{3 \ 0} \quad \downarrow \\ 1 \ 3 \ 2 \\ \underline{1 \ 2 \ 0} \quad \downarrow \\ 1 \ 2 \ 0 \\ \underline{1 \ 2 \ 0} \\ 0 \end{array}$$