

Calculation

Strategies to support calculation in Year One and Year Two



Calculation

- **Addition:** add, plus, sum, total, more
- **Subtraction:** subtract, minus, take-away, less
- **Multiplication:** multiply, times, lots of
- **Division:** divide, share, group

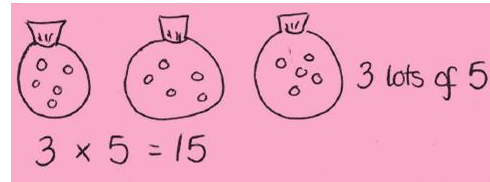


The underpinnings of maths

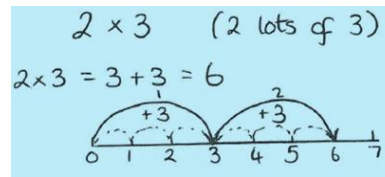
- Concrete



- Pictorial



- Abstract



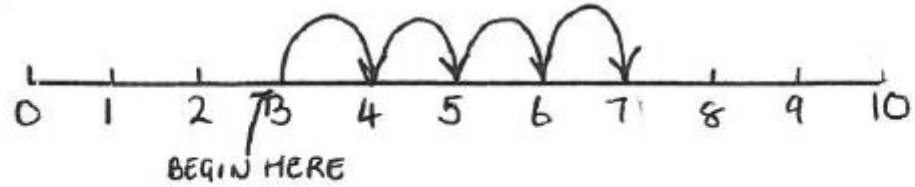
Addition

$$3+4=$$

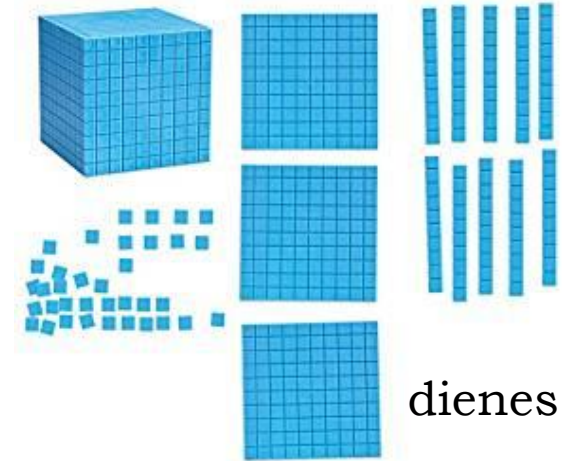


Labelled number line (counting on)

$$3+4=7$$

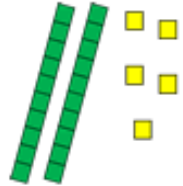


Addition



'Exploding numbers'

$$\begin{array}{c} \textcircled{12} + \textcircled{25} = 37 \\ \begin{array}{c} 10 \quad 11 \\ 10 \quad 10 \end{array} \end{array}$$



Addition

Partitioning:
splitting the
tens and
units to
calculate

...towards the end of the year

Partitioning

$$\begin{array}{r} 12 + 25 = 37 \\ \swarrow \quad \downarrow \quad \swarrow \quad \downarrow \\ 10 \quad 2 \quad 20 \quad 5 \\ \\ 2 + 5 = 7 \\ 10 + 20 = 30 \end{array}$$

Expanded Column Method

$$\begin{array}{r} \text{T} \quad \text{U} \\ 1 \quad 2 \\ + 2 \quad 5 \\ \hline \quad 7 \\ 3 \quad 0 \\ \hline 3 \quad 7 \end{array}$$



Addition

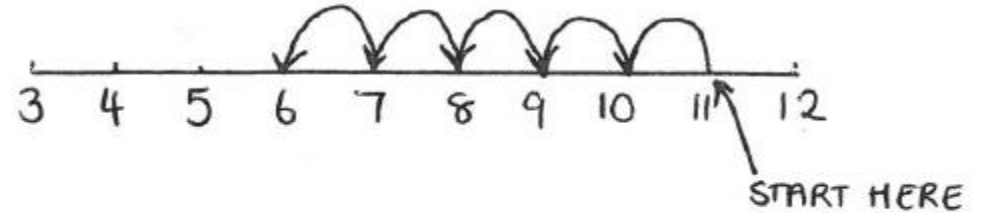
mental methods



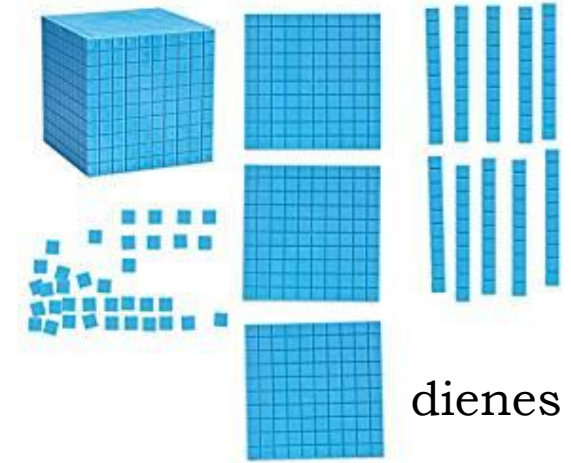
Subtraction

Labelled number line (counting back)

$$11 - 5 = 6$$



Subtraction



dienes

'Exploding numbers' ★

$$28 - 13 = 15$$

10 10

Base ten blocks representing 28 (two rods and eight units) and 13 (one rod and three units). The rods are green and the units are yellow.

Subtraction

Partitioning

$$\begin{aligned}28 - 13 &= 15 \\28 - 3 &= 25 \\25 - 10 &= 15\end{aligned}$$

Column (no exchanging)

$$\begin{array}{r} \text{T U} \\ 28 \\ - 13 \\ \hline 15 \end{array}$$

...towards the end of the year

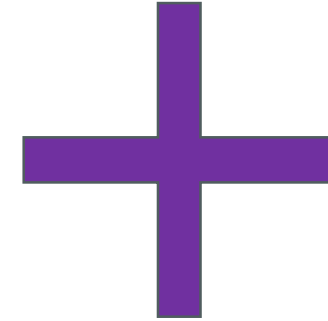


Subtraction

mental methods



Multiplication



Repeated addition

$3 \times 4 =$ is the same as $4 + 4 + 4 =$



Multiplication - Arrays

Hip Hip Array!

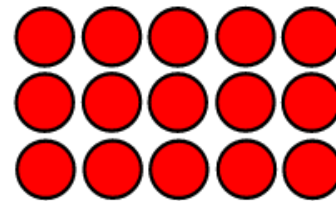
Concrete: $2 \times 3 =$

$3 \times 2 =$

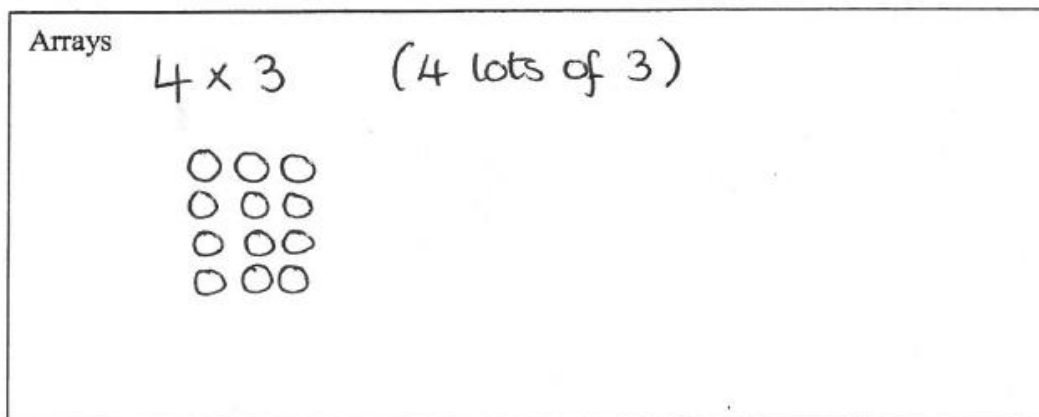
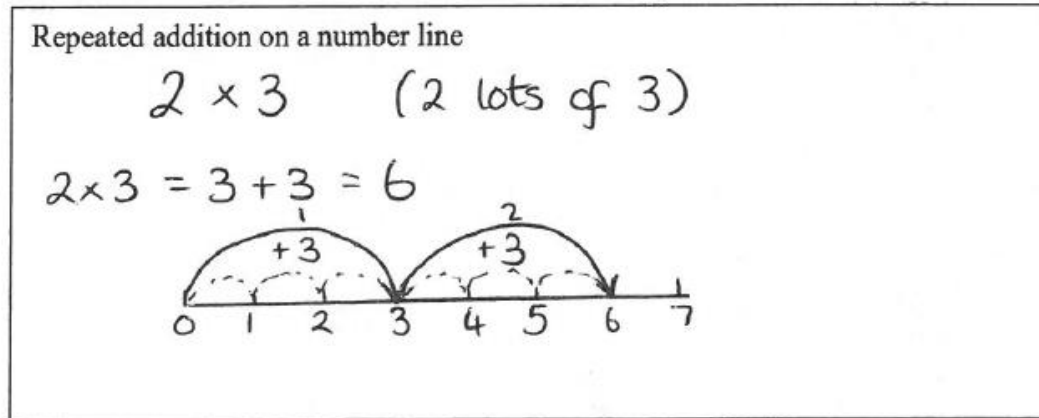


Pictorial: $3 \times 5 =$

$5 \times 3 =$

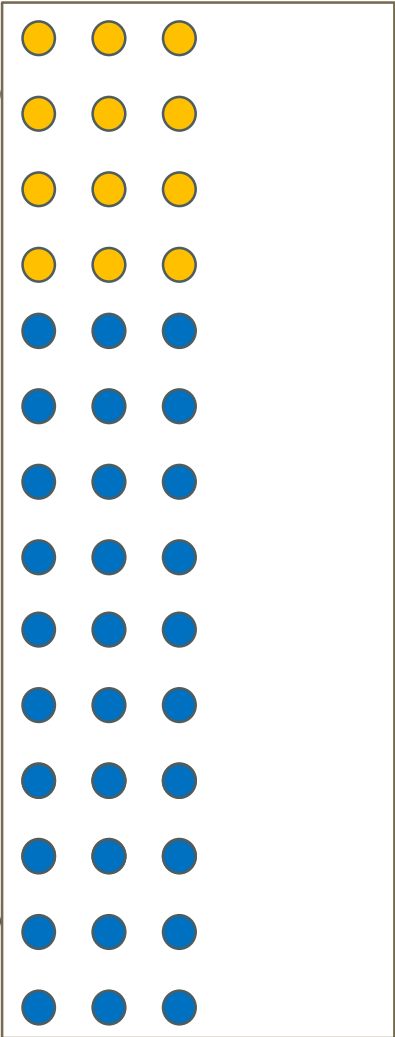


Multiplication – Pictorial and Abstract



Multiplication - Partitioning

Arrays (refined)
 14×3



14

3

4

12

10

30

$30 + 12 = 42$

The diagram illustrates the partitioning of a 14×3 array. A vertical array of 42 dots is shown, with the top 4 rows (yellow) and bottom 10 rows (blue). To the right, a rectangular array is partitioned by a horizontal line. The top part is a 4×3 array containing 12 dots, and the bottom part is a 10×3 array containing 30 dots. The total number of dots is calculated as $30 + 12 = 42$.



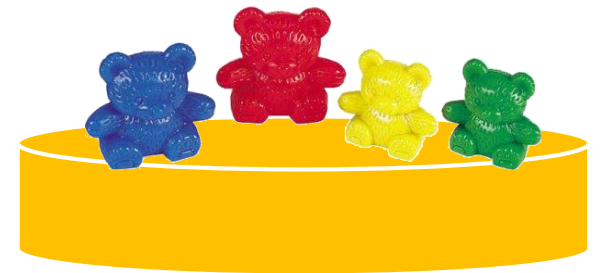
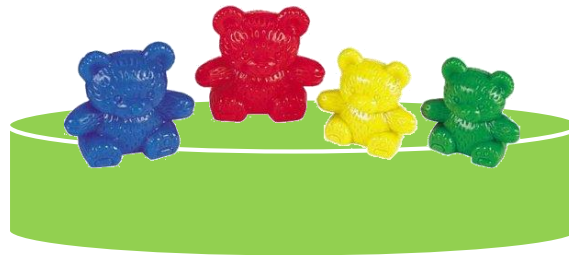
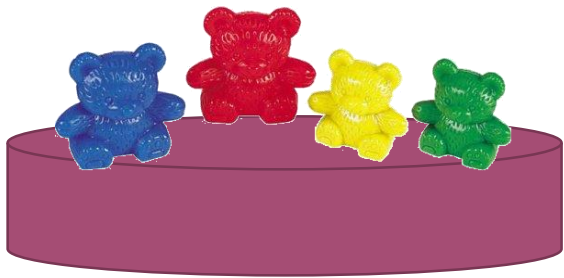
Multiplication

mental methods



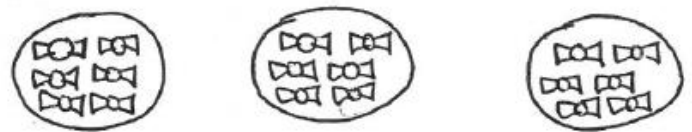
Division

$$12 \div 3 =$$



Division – Pictorial and Abstract

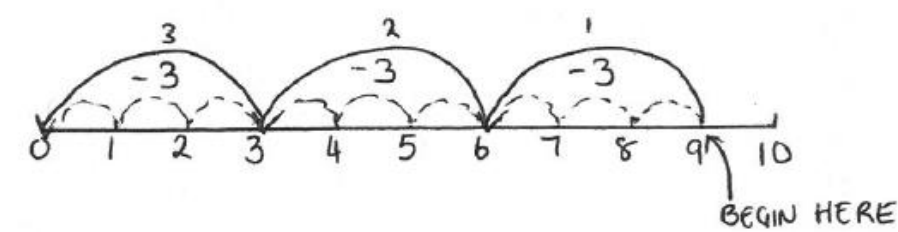
Objects/pictures



$18 \div 3 = 6$

Repeated Subtraction


$9 \div 3$



Division

The relationship between multiplication and division

Array

$$12 \div 4 = 3$$


The diagram shows a rectangular array of 12 small circles. The circles are arranged in 3 rows and 4 columns. This visualizes the division $12 \div 4 = 3$, where 12 is the total number of items, 4 is the number of groups, and 3 is the number of items in each group.



Calculation Policy

- Take a copy
- This presentation will go on the website
- We will collect your child from class to come and have a go at the challenges

