



**Written methods for  
calculation  
addition, subtraction,  
multiplication and division**

**Cleveland Road Primary School**

# Addition

# Year 1

Children need to understand the concept of equality before using the '=' sign

$$9 + 7 = 16$$

$$16 - 7 = 9$$

$$7 = 16 - 9$$

$$2 = 1 + 1$$

$$2 + 3 = 4 + 1$$

$$3 = 3$$

$$2 + 2 + 2 = 4 + 2$$

Children need to solve missing number problems :

$$3 + \square = 7$$

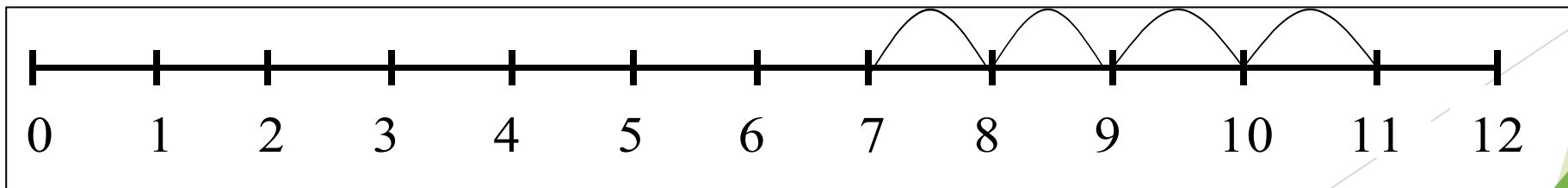
$$\square + 3 = 7$$

$$7 = \square - 9$$

# The Number Line (counting in 1s)

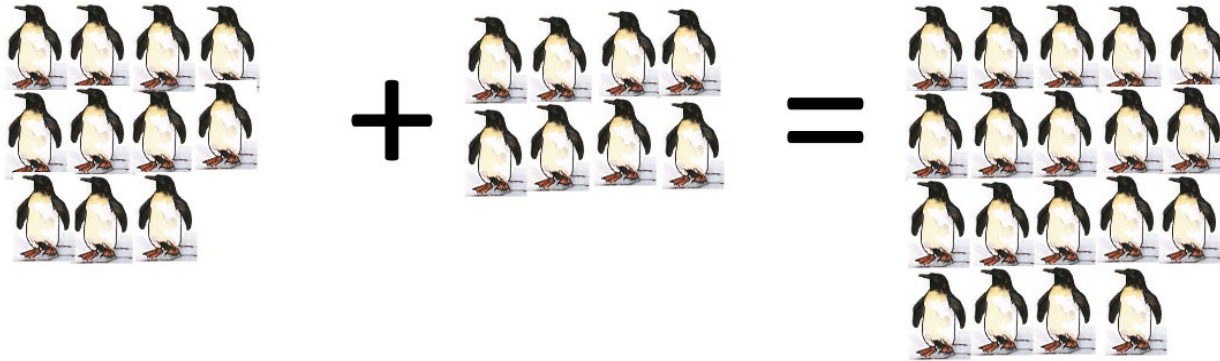
Children use a number line to count on in ones.  
Children use number lines and practical resources to support calculation and teachers *demonstrate* the use of the number line.

$$7 + 4 = 11$$



$$11 + 8 = 19$$

Pictorial representations



$$11 + 8 = 19$$

# Year 2

## + = signs and missing numbers

Continue using a range of equations as in Year 1 but with appropriate, larger numbers.

Extend to:  $14 + 5 = 10 + \square$

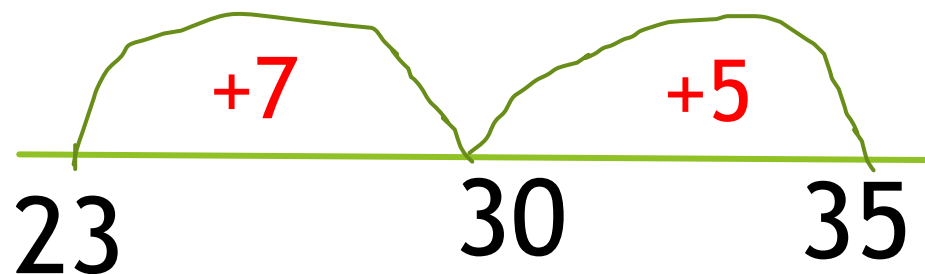
$$32 + \square + \square = 100$$

$$35 = 1 + \square + 5$$

## The Empty Number Line: Bridging through multiple of 10.

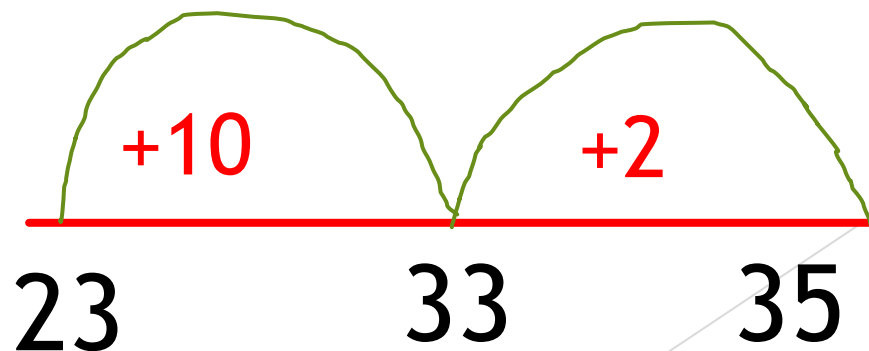
The steps in addition often bridge through a multiple of 10 e.g. Children should be able to partition the 7 to relate adding the 2 and then the 5.

$$23 + 12 = 35$$



***Your turn:***

$$34 + 15 = 49$$



## Partition into tens and ones and recombine

$$\begin{aligned}12 + 23 \\&= 10 + 2 + 20 + 3 \\&= 30 + 5 \\&= 35\end{aligned}$$

***Your turn:***

$$56 + 32 =$$

Recombining shows children the total value of each digit and makes them think about values rather than looking at a number like 253 as 2, 5 and 3.

## Expanded column addition

(calculations which **do not** involve carrying over)

**e.g.**  $23 + 35 =$

$$\begin{array}{rcl}23 & 20 + 3 \\+ 35 & \underline{30 + 5} \\& 50 + 8 = \mathbf{58}\end{array}$$

**Column addition** (calculations which **do not** involve carrying over)

*This method can  
be introduced  
Year 2 (spring):*

$$\begin{array}{r} 38 \\ + \underline{61} \\ 99 \end{array}$$

Write the missing numbers to make the equation correct:

$$18 + 9 = 20 + \square$$

$$42 + \square + \square = 100$$

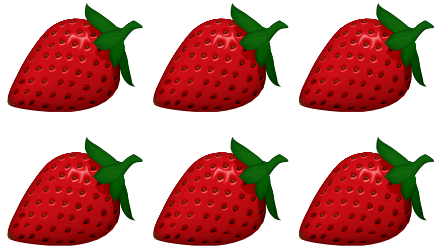
$$75 = 17 + \square + 15$$

$$8 = \square - 12$$

# Multiplication

## Year 1

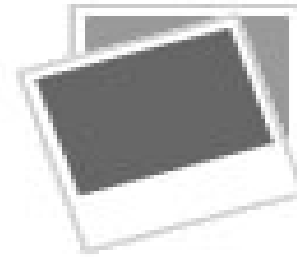
Multiplication is related to doubling and counting groups of the same size



**Looking at columns**

$$2 + 2 + 2$$

**3 groups of 2**



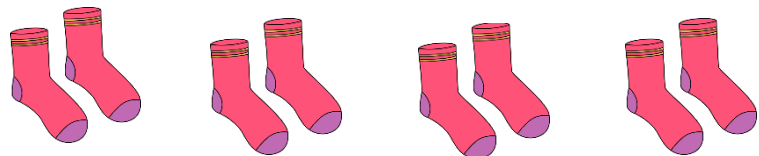
**Looking at rows**

$$3 + 3$$

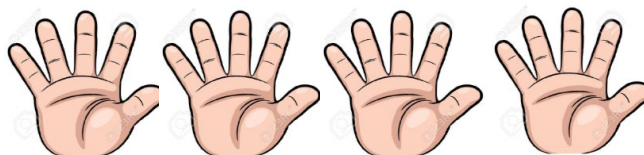
**2 groups of 3**

## Counting using a variety of practical resources

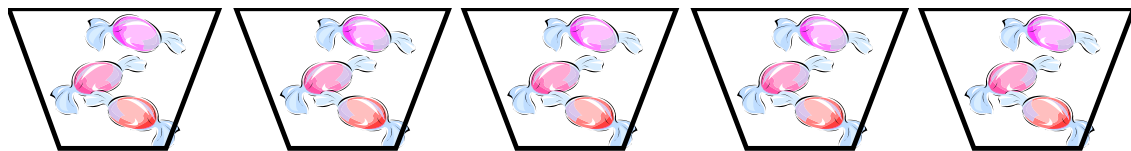
Counting in 2s e.g. counting socks, shoes, animal's legs



Counting in 5s e.g. counting fingers



**Pictures :** There are 3 sweets in one bag. How many sweets are there in 5 bags?



## Year 2

### x = signs and missing numbers

$$7 \times 2 = \square$$

$$\square = 2 \times 7$$

$$7 \times \square = 14$$

$$14 = \square \times 7$$

$$\square \times 2 = 14$$

$$14 = 2 \times \square$$

$$\square \times \nabla = 14$$

$$14 = \square \times \nabla$$

### Arrays and repeated addition

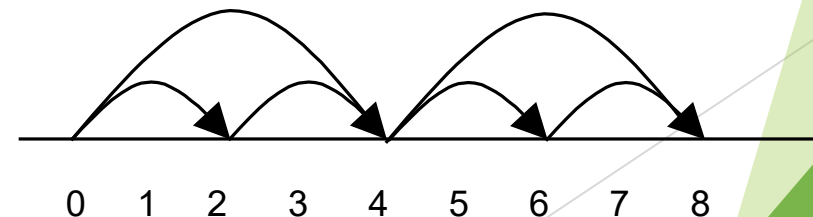
● ● ● ●       $4 \times 2$  or  $4 + 4$

● ● ● ●

$2 \times 4$  or  $2 + 2 + 2 + 2$

*How can you show  $3 \times 2 = 6$   
using arrays?*

Grouping on  
number line:



## Partitioning and grid method

Children need to be secure with partitioning numbers into 10s and 1s and partitioning in different ways:  $6 = 5 + 1$  so double 6 is the same as double five add double one.

***Your turn:***

$$\begin{aligned} 6 &= 5 + 1 \\ 12 &= 10 + 2 \end{aligned}$$

$$15 \times 2$$

$$10 + 5$$

$$\begin{array}{c} 10 \\ \downarrow \\ 20 \end{array} + \begin{array}{c} 5 \\ \downarrow \\ 10 \end{array} = 30$$

$$14 \times 2 =$$

|                |   |   |   |   |
|----------------|---|---|---|---|
| $\times$       | 1 | 0 |   | 5 |
| 2              | 2 | 0 | 1 | 0 |
| $20 + 10 = 30$ |   |   |   |   |

1) If I start with 3 and count on in twos up to 30 will I say 17?

2) Which has the most biscuits:

4 packets of biscuits with 5 in each packet, or

3 packets of biscuits with 10 in each packet?

Explain your reasoning.

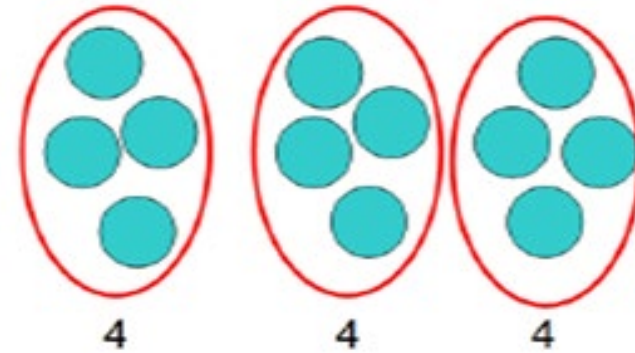
3)  $40 \div 2 = 4 \times \boxed{\phantom{00}}$

4)  $50 \div 5 = 10$   
 $5 \times 10 = \boxed{\phantom{00}}$

# Division

Year 1

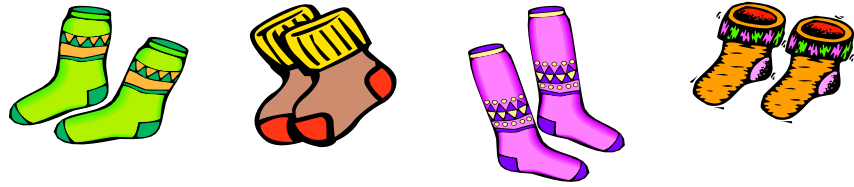
6 sweets are shared  
between 2 people. How  
many do they have each?



12 shared between 3 is 4

Grouping:      Sorting objects into 2s / 3s/ 4s etc

How many pairs of socks are there?



How many groups of 4 can be made with 12 stars?



## ÷ = signs and missing numbers

$$6 \div 2 = \square$$

$$\square = 6 \div 2$$

$$6 \div \square = 3$$

$$3 = 6 \div \square$$

$$\square \div 2 = 3$$

$$3 = \square \div 2$$

$$\square \div \nabla = 3$$

$$3 = \square \div \nabla$$

Year 2

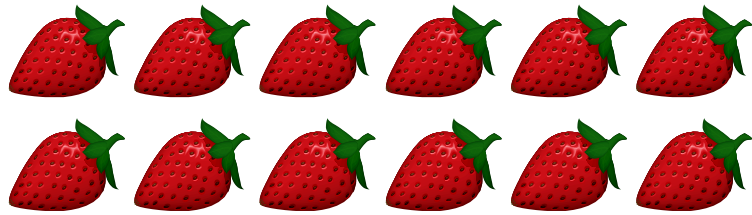
## Grouping and sharing

Practical grouping and sharing as Year 1 but with larger numbers.

20 cupcakes are shared  
between 5 children. How  
many cupcakes do they  
each get?



Sharing: There are 12 strawberries. They are shared between 4 people. How many do they have each?



Grouping using a number line: How many 2s make 6?

$6 \div 2$  can be modelled as:

