#### Year One

Revise adding two sets of numbers by drawing pictures, dots or tally marks.

E.g. At a party, 1 eat 3 cakes and my friend eats 6. How many cakes did we eat altogether?

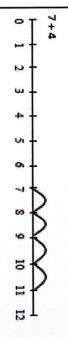
### + = signs and missing numbers

Children need to understand the concept of equality before using the '=' sign. Calculations should be written either side of the equality sign so that the sign is not just interpreted as 'the answer'.

Missing numbers need to be placed in all possible places.

#### The Number Line

Children use a numbered line to count on in ones.



Recording by:

- drawing jumps on prepared lines
- constructing own lines

Extend to word problems using a number line. E.g. 7 people are on the bus. 4 more get on at the next stop. How many are on the bus now. (See above)

Extend to adding one-digit and two-digit numbers to 20 using the number line. E.g. 12 + 5 (start counting on from 12 on the number line, and move 5 places/jumps to land on 17).

#### Year Two

### + = signs and missing numbers

Continue using a range of equations as in Y1 but with appropriate, larger numbers. E.g. Extend to  $14+5=10+\square$  and  $32+\square+\square=100$   $35=1+\square+5$ 

Count on using a number line in tens and ones (rather than jump in ones along the whole line, jump on a whole ten, then jump in ones).

E.g. 23 + 12 = 23 jump on 10/+ 10 = 33 then jump on 2/+ 2 = 35



H

## The Number Line: bridging through 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.

8+7=15

Add 9 or 11 by adding 10 and adjusting by 1



Calculations methods for more able pupils can be extended to:

Partition into tens and ones for larger numbers

Partition both numbers and recombine

34 + 23 = 57 +10 +10 +10 +3 +3 44 54 57

Count on by partitioning the second number only e.g.

Partition into tens and ones and recombine using informal jottings rather than a number line

Partition means to break the tens and units digit up into 2 separate numbers. E.g. 12 can be broken up into 10 + 2 (12); 23 can be broken up into 20 + 3 (23)

E.g. 12 + 23

Group the tens numbers and add them = 10 + 20 (30)
Group the units numbers and add them = 2 + 3 (5)
Add both sets of numbers together = 30 + 5
Get the answer = 35

E.g. 16 + 35 = 10 + 30 = 40; 6 + 5 = 11 = 40 + 11 = 51

Partition into tens and units using the diamond method

### signs and missing numbers

Year One

7-3=0 D-3=4

U=7-3

4=7-0

7-0=4 1-V=4

4=□-∇

Understand subtraction as 'take away'

E.g. 5-2. I had five balloons. Two burst. How many did I have left?



Understand how to 'find the difference' by counting on/up ...

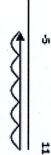
do I need in order to buy the socks? I have saved 5p. The socks that I want to buy cost 11p. How much more



bear cost? (Count on/up from the £2 to £5) E.g. A teddy bear costs £5 and a doll costs £2. How much more does the

## Find a 'difference' by counting back

many cars fit in the garage? I have 11 toy cars. There are 5 cars too many to fit in the garage. How



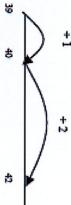
number line. E.g. 13 – 6; 19 – 8; 17-11; 19-14 etc. Extend to subtracting one-digit and two-digit numbers to 20 using the

### Year Two

### = signs and missing numbers

appropriate numbers. Extend to 14 + 5 = 20 - [] Continue using a range of equations as in Year 1 but with

Find a small difference by counting on in units. E.g. 42 - 39 = 3



Find a difference by counting on

Find a difference by subtracting the units in one jump.

Counting back method



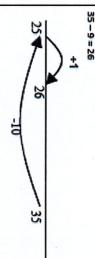
#### Extension methods:

Subtracting the tens in one jump and the units in one jump.

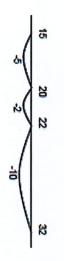
Counting back method

second number only) Use known number facts and place value to subtract (partition

Subtract 9 or 11. Begin to add/subtract 19 or 21



Bridge through 10 where necessary 32-17



## **Multiplication Guidelines**

size and repeated 'addition'. Multiplication is related to doubling, counting groups of the same Year One

2+2+2 Looking at columns

3 groups of 2

5.3.5+5+5

Looking at rows

### 2 groups of 3

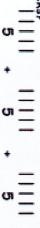
## 01234567691011111111111

## Counting using a variety of practical resources

Counting in 10s e.g. fingers, toes... Counting in 5s e.g. counting fingers, fingers in gloves, toes... Counting in 2s e.g. counting socks, shoes, animal's legs...

#### Pictures / marks

3 packs There are 5 cakes in a pack. How many cakes in



There are 3 sweets in a bag. How many sweets are there in 5



## Introduce arrays and repeated addition

4x2or4+4

2x4or2+2+2+2

#### $\square \times 2 = 14$ 7x2=[

x = signs and missing numbers □=2×7

Year Two

14=2×U  $\square \times \nabla = 14$ 7 x 🗆 = 14

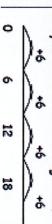
14 = □ × ∇ 14 = U x 7

#### Arrays

2x4or2+2+2+2 4x2or4+4

#### Repeated addition

many kittens are there altogether? There are 4 cats. Each cat has 6 kittens. How



# Doubling multiples of 5 up to 50 using partitioning

15 x 2 = 30

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



AND double 15

20 + 5 = 30

9

N 20 9 = 30

### **Division Guidelines**

correspondence. <u>Sharing</u> - Requires secure counting skills. Develop importance of one-to-one

Year One

Sharing — 6 sweets are shared between 2 people. How many do they have



Grouping - Sorting objects into 2s / 3s/ 4s etc. How many pairs of socks are











Grouping in 4s:

4 apples are packed in a basket. How many baskets can you fill with 12 apples?

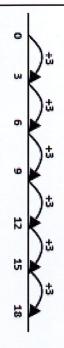






pots are there? Grouping in 3s: There are 12 crocus bulbs. Plant 3 in each pot. How many

Grouping - How many 3's make 18? (Draw jumps of 3 along a number line. This shows that you need 6 jumps of 3 to reach 18).



We do not use repeated subtraction.

### ÷ = signs and missing numbers

Year Two

□=6÷2 3=U÷2  $\Box \div \nabla = 3$ 6-0-3

D÷2=3 6+2=0

3=U÷V 3=6 +0

## Understand division as sharing and grouping

How many people can have 2 each? How many 2s make 6? 6 ÷ 2 can be modelled as: There are 6 strawberries

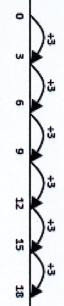
6 ÷ 2 can be modelled as:

18 ÷ 3 can be modelled as:

N ليا Þ Un

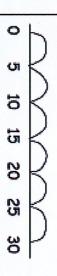
Sharing — 18 shared between 3 (see Year 1 diagram)

Grouping - How many 3's make 18?



30 ÷ 5 extended to a word problem ...

with 30p? A chew bar costs 5p. How many can I buy



=20 ÷4=5 fractions e.g. find 光, ¼, ¾ of shapes and sets of objects. E.g. ¼ of 20 Fractions - Link to counting, understanding number and simple

and 10p coins In the context of money count forwards and backwards using 2p, 5p

We do not use repeated subtraction.