

National Curriculum For Mathematics



Calculation Policy

Routes through Addition

2021

EARLY SKILLS - Most children in Year 1

- **Story around structure** - I have a set of 3 objects to start with and I get 5 more 'How many altogether?'
- Often modelled with **sets of 'things'**- essentially the story follows the same plot of 'have', 'more', 'altogether'
- Lots of **songs and rhymes**.

Number tracks and number lines (labelled) - Supports children to learn to count on from the larger number eg $3 + 5$ a child chooses the larger number, even when it is not the first number, and counts on from there: 'six, seven, eight'

Part-Whole Models - Children understand partitioning and know to add the parts together to make the whole.

Bar models - Another type of a part-whole model that can support children to represent addition. Cubes and counters can be used in a line as a concrete representation.

• Very practical

- **Number shapes (numicon)** - useful to support children to explore partitioning and addition, especially number bonds.
- **Cubes** - support children to **count all** eg a child doing $3 + 5$ counts out three counters and then five counters and then finds the total by counting all the counters and then also add on 1 digit numbers
- **Tens Frame** - Ten frame can support children to understand different structures of addition. It can be used to add within 20 by making 10 and then adding the partitioned number.
- **Bead Strings** - Effective to find bonds to 10 and then within 20.
- **Base 10/dienes** - Supports children adding tens and ones together.

Concrete

$2 + 3 = 5$
 $4 + 1 = 5$
 $5 + 3 = 8$
 $3 + 5 = 8$
 $5 + 5 = 10$
 $20 + 4 = 24$

Pictorial

$6 + 1 = 7$
 $3 + 5 = 8$
 Use diagram and counters to tell their own number story
 First Then Now
 $4 + 3 = 7$
 $6 + 7 = 13$
 $10 + 3 = 13$
 $7 = 4 + 3$

Abstract

'3'
 '5'
 $5 + 3 = 8$

Most children in Year 2

Number tracks and number lines (Labelled) - Supports children to learn to count on from the larger number eg $14 + 71$ a child chooses the larger number.

Number tracks and number lines (blank) - provides children to add numbers in smaller parts by jumping to the nearest 10 and adding the rest of the number or as a whole by adding the tens and ones separately.

100 square - Used for adding 1 and 2 digit numbers together by counting on (from the largest number)

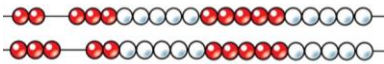
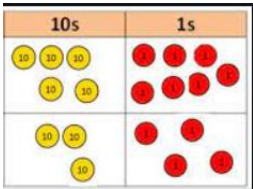
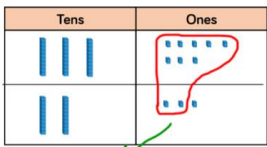
Part-Whole Models - Children understand partitioning and know to add the parts (2 and 3 parts) together to make the whole.

Bar models - Another type of a part-whole model (2 and 3 parts) that can support children to represent addition.

• Very practical

- **Number shapes (numicon)** - useful to support children to add three 1-digit numbers together.
- **Tens Frame** - Is used to add within 20 by add 3 1-digit numbers together
- **Bead Strings** - Effective to find bonds to 10, 20 and then 100
- **Base 10/dienes** - Supports children adding two 2-digit numbers together (and crossing 10s).
- **Place Value Counters** - Supports children adding two 2-digit numbers together (and crossing 10s).

Concrete



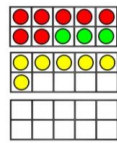
$4 + 2 + 6 = 12$



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

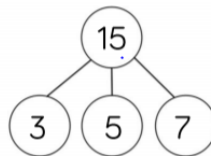
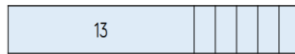
$38 + 5 = 43$

Pictorial



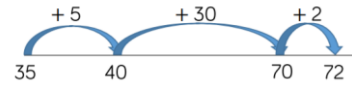
$7 + 6 + 3 = 16$

10



Abstract

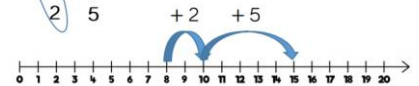
$35 + 37 = 72$



$8 + 7 = 15$



$8 + 7 = 15$



Most children in year 3 and 4

Part-Whole Models - Children understand partitioning and know to add the parts (2 and 3 parts) together to make the whole. In KS2, they can be used to add fractions, decimals and percentages.

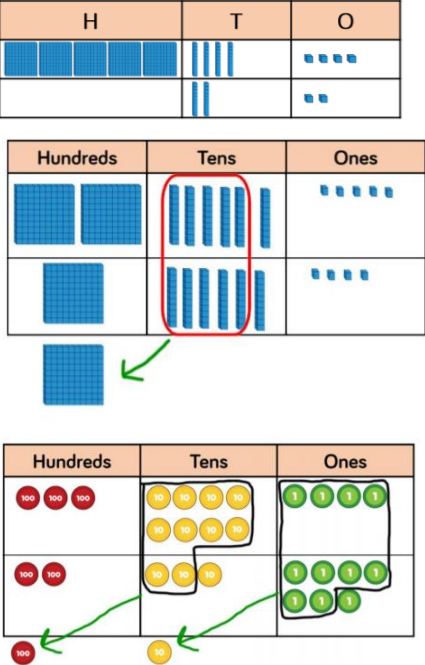
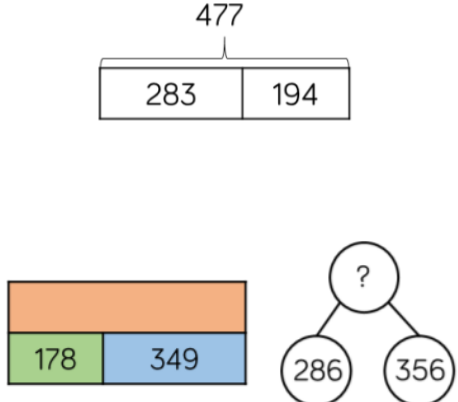
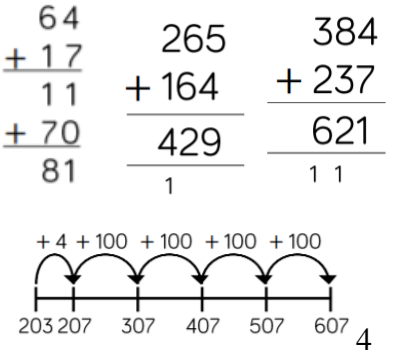
Bar models - Another type of a part-whole model (2 and 3 parts) that can support children to represent addition.

Number tracks and number lines (blank) - provides children to add numbers in smaller parts by jumping to the nearest 10 and adding the rest of the number or as a whole by adding the tens and ones separately.

Column Addition -

• **Concrete method to support column addition-**

- **Base 10/dienes** - Supports children adding two 2-digit numbers together (and crossing 10s).
- **Place Value Counters** - Supports children adding two 2-digit numbers together (and crossing 10s).

Concrete	Pictorial	Abstract
		

Most children in Year 5 and 6.

Part-Whole Models - Children understand partitioning and know to add the parts (2 and 3 parts) together to make the whole. In KS2, they can be used to add fractions, decimals and percentages.

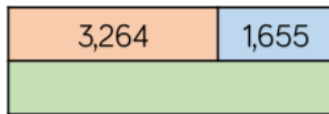
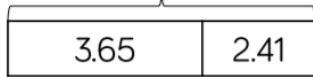
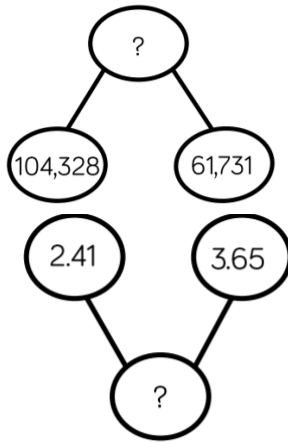
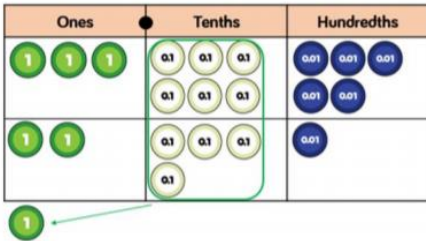
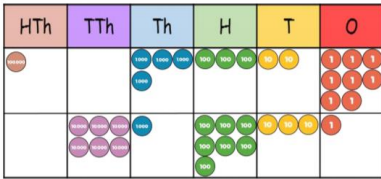
Bar models - Another type of a part-whole model (2 and 3 parts) that can support children to represent addition. In KS2, children can draw bar models to represent larger numbers, decimals and fractions.

Number lines (blank) - to support children adding time intervals.

Column Addition -

• **Concrete method to support column addition-**

- **Place Value Counters** - Supports children adding two 2-digit numbers together (and crossing 10s).



1	0	4	3	2	8
+	6	1	7	3	1
1	6	6	0	5	9

1

$$\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \end{array}$$

1

