

# Meadowfield Primary School

## Calculation Policy

(based on the White Rose Maths Calculation Policy)

### Addition progression

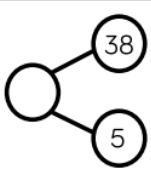
Skill	Year	Representations and models	
Add two 1-digit numbers to 10	1	Part-whole model Bar model	Ten frames (within 10) Bead strings (10) Number tracks
Add 1 and 2-digit numbers to 20	1	Part-whole model Bar model Ten frames (within 20)	Bead strings (20) Number tracks Number lines (labelled)
Add three 1-digit numbers	2	Part-whole model Bar model	Ten frames (within 20) Number shapes
Add 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled)	Number lines (blank) Hundred square
Skill	Year	Representations and models	
Add two 2-digit numbers	2	Part-whole model Bar model Number lines (blank)	Base 10 Place value counters Column addition
Add with up to 3-digits	3	Part-whole model Bar model	Base 10 Place value counters Column addition
Add with up to 4-digits	4	Part-whole model Bar model	Base 10 Place value counters Column addition
Add with more than 4 digits	5	Part-whole model Bar model	Place value counters Column addition
Add with up to 3 decimal places	5	Part-whole model Bar model	Place value counters Column addition

Skill: Add 1-digit numbers within 10	Year: 1
	<p>When adding numbers to 10, children can explore both aggregation and augmentation.</p> <p>The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.</p> <p>The combination bar model, ten frame, bead string and number track all support augmentation.</p>

Skill: Add 1 and 2-digit numbers to 20	Year: 1/2
	<p>When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.</p> <p>Different manipulatives can be used to represent this exchange. Use concrete resources alongside number lines to support children in understanding how to partition their jumps.</p>

Skill: Add three 1-digit numbers	Year: 2
	<p>When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.</p> <p>This supports children in their understanding of commutativity.</p> <p>Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.</p>

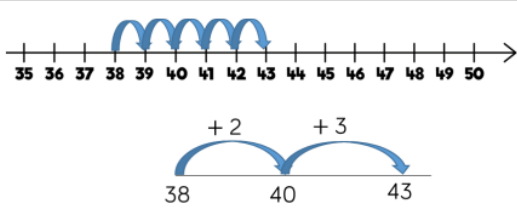
**Skill: Add 1-digit and 2-digit numbers to 100**
**Year: 2/3**



38
?

38

$38 + 5 = 43$



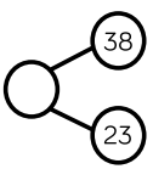
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.

They should also apply their knowledge of number bonds to add more efficiently e.g.  $8 + 5 = 13$  so  $38 + 5 = 43$ .

Hundred squares and straws can support children to find the number bond to 10.

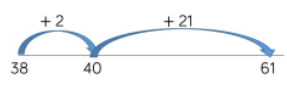
**Skill: Add two 2-digit numbers to 100**
**Year: 2/3**



38
?

38
23

$38 + 23 = 61$



At this stage, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.

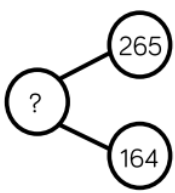
Children can also use a blank number line to count on to find the total. Encourage them to jump to multiples of 10 to become more efficient.

Tens	Ones
3	8
2	3
6	1

$$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$$

Tens	Ones
3	8
2	3
6	1

**Skill: Add numbers with up to 3 digits**
**Year: 3**



265
?

265
164

$265 + 164 = 429$

Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.


Plain counters on a place value grid can also be used to support learning.

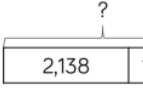
Hundreds	Tens	Ones
2	6	5
1	6	4
4	2	9

$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$$

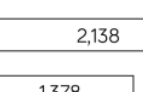
Hundreds	Tens	Ones
2	6	5
1	6	4
4	2	9

**Skill: Add numbers with up to 4 digits**
**Year: 4**





















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



$1,378 + 2,148 = 3,526$

Thousands	Hundreds	Tens	Ones
			
			

Thousands	Hundreds	Tens	Ones
			
			

Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

## Skill: Add numbers with more than 4 digits

Year: 5/6

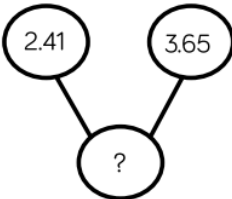
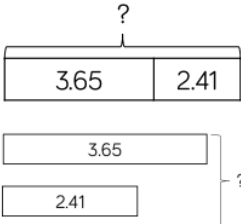
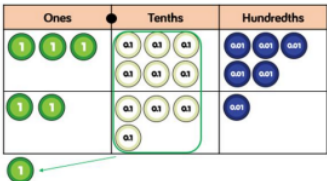
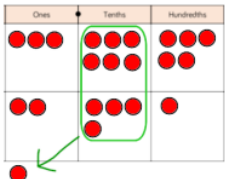
$$104,328 + 61,731 = 166,059$$

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

1

Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.

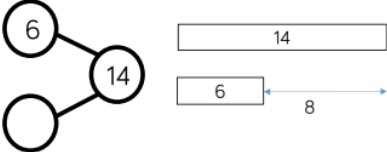
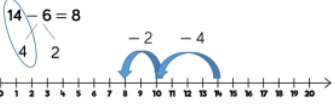
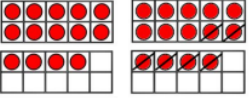
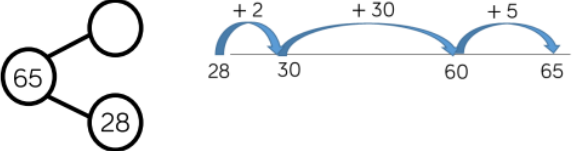
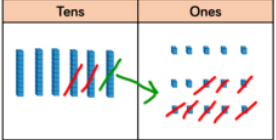
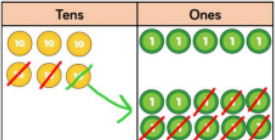
Skill: Add with up to 3 decimal places	Year: 5
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> <div style="text-align: center;"> <math display="block">  \begin{array}{r}  3.65 \\  + 2.41 \\  \hline  6.06 \\  \hline  1  \end{array}  </math> </div> </div> <div style="text-align: center; margin: 10px 0;"> <div style="border: 1px solid black; border-radius: 15px; padding: 10px; display: inline-block;"> <math>3.65 + 2.41 = 6.06</math> </div> </div> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;">  </div> <div style="text-align: center;">  </div> </div>	<p>Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1, 2 and then 3 decimal places.</p> <p>Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.</p>

# Subtraction progression

Skill	Year	Representations and models
Subtract two 1-digit numbers to 10	1	Part-whole model Bar model Ten frames (within 10) Bead strings (10) Number tracks
Subtract 1 and 2-digit numbers to 20	1	Part-whole model Bar model Ten frames (within 20) Bead string (20) Number tracks Number lines (labelled)
Subtract 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled) Number lines (blank) Straws Hundred square
Subtract two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Base 10 Place value counters Column addition

Skill	Year	Representations and models
Subtract with up to 3-digits	3	Part-whole model Bar model Base 10 Place value counters Column addition
Subtract with up to 4-digits	4	Part-whole model Bar model Base 10 Place value counters Column addition
Subtract with more than 4 digits	5	Part-whole model Bar model Place value counters Column addition
Subtract with up to 3 decimal places	5	Part-whole model Bar model Place value counters Column addition

Skill: Subtract 1-digit numbers within 10	Year: 1
	<p>Part-whole models, bar models, ten frames and number shapes support partitioning.</p> <p>Ten frames, number tracks, single bar models and bead strings support reduction.</p> <p>Cubes and bar models with two bars can support finding the difference.</p>

Skill: Subtract 1 and 2-digit numbers to 20	Year: 1/2
 <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;"> <math>14 - 6 = 8</math> </div>  	<p>When subtracting one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.</p> <p>Children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Ten frames, number shapes and number lines are particularly useful for this.</p>
Skill: Subtract 1 and 2-digit numbers to 100	Year: 2
 <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;"> <math>65 - 28 = 37</math> </div>  	<p>At this stage, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.</p> <p>Children can also use a blank number line to count on to find the difference. Encourage them to jump to multiples of 10 to become more efficient.</p>

**Skill: Subtract numbers with up to 3 digits**

**Year: 3**

$$\begin{array}{r} 435 \\ - 273 \\ \hline \end{array}$$

$435 - 273 = 262$

Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

**Skill: Subtract numbers with up to 4 digits**

**Year: 4**

$$\begin{array}{r} 4,357 \\ - 2,735 \\ \hline \end{array}$$

$4,357 - 2,735 = 1,622$

Base 10 and place value counters are the most effective manipulatives when subtracting numbers with up to 4 digits.

Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.

Plain counters on a place value grid can also be used to support learning.

**Skill: Subtract numbers with more than 4 digits**

**Year: 5/6**

$$\begin{array}{r} 294,382 \\ - 182,501 \\ \hline \end{array}$$

$294,382 - 182,501 = 111,881$

Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.

At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.

