

## Maths Calculation Progression and Policy – Addition and Subtraction

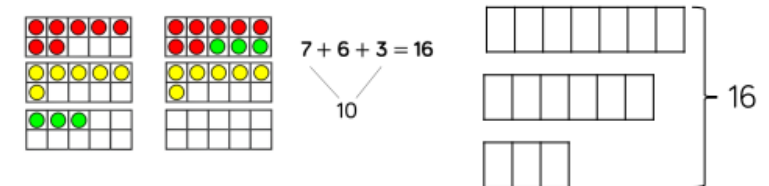
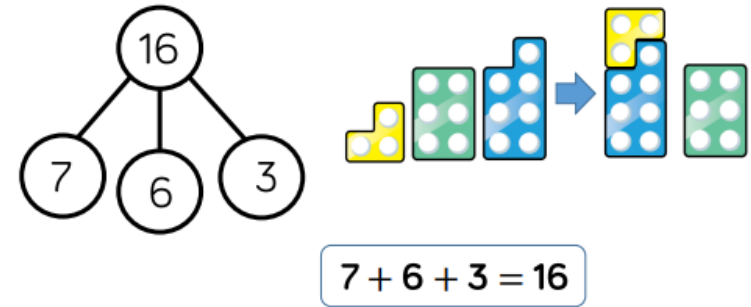
<u>Addition</u>		
<u>Skill</u>	<u>Information</u>	<u>Representations</u>
<b>Year 1 -</b> Add 1-digit numbers within 10	<p>When adding numbers to 10, children can explore both aggregation and augmentation.</p> <p>The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.</p> <p>The combination bar model, ten frame, bead string and number track all support augmentation.</p>	<p>Representations for 4 + 3 = 7 include: a part-whole model with two circles (4 and 3) combining into a larger circle (7); a discrete bar model with two bars (4 and 3) combining into a single bar (7); a continuous bar model with a single bar (7) partitioned into 4 and 3; a ten frame with 4 red dots and 3 yellow dots; a bead string with 4 red beads and 3 yellow beads; a number track from 1 to 10 with a jump from 4 to 7; and a combination bar model with a bar (7) partitioned into 4 and 3.</p>
<b>Year 1 -</b> Add 1 and 2-digit numbers to 20	<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>	<p>Representations for 8 + 7 = 15 include: a part-whole model with two circles (8 and 7) combining into a larger circle (15); a discrete bar model with two bars (8 and 7) combining into a single bar (15); a continuous bar model with a single bar (15) partitioned into 8 and 7; a ten frame with 8 red dots and 7 yellow dots; a bead string with 8 red beads and 7 yellow beads; a number track from 0 to 20 with jumps from 8 to 10 (+2) and 10 to 15 (+5); and a combination bar model with a bar (15) partitioned into 8 and 7.</p>

**Year 2 –**  
Add  
three 1-  
digit  
numbers

When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add numbers more effectively.

This supports children in their understanding of commutativity.

Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.

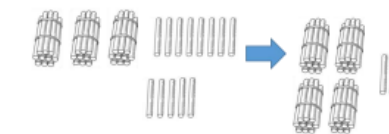
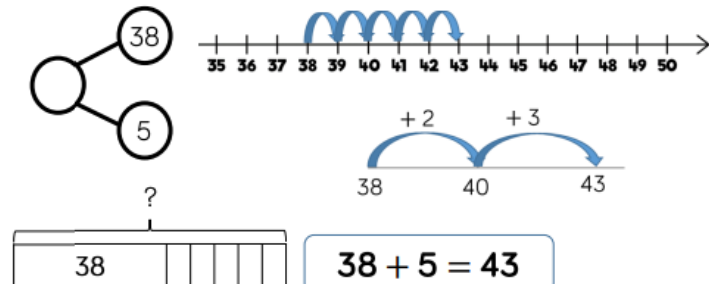


**Year 2 –**  
Add 1  
digit and  
2 digit  
numbers  
to 100

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

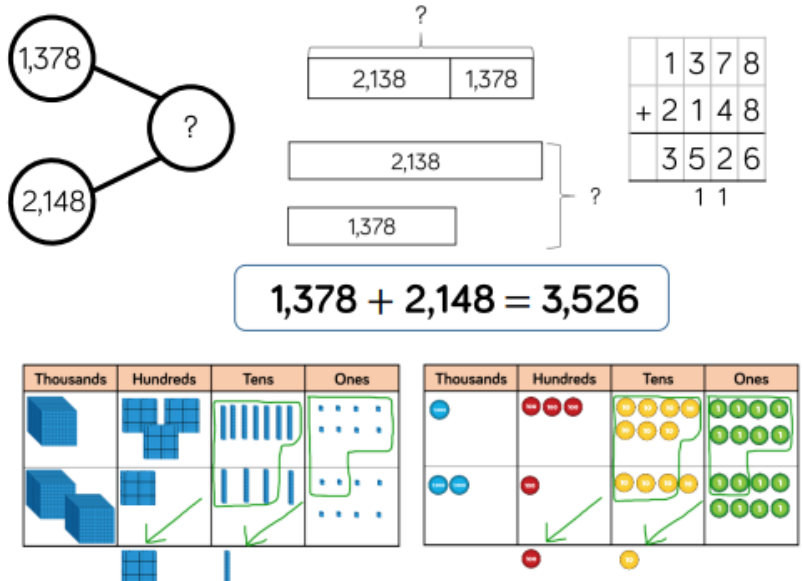
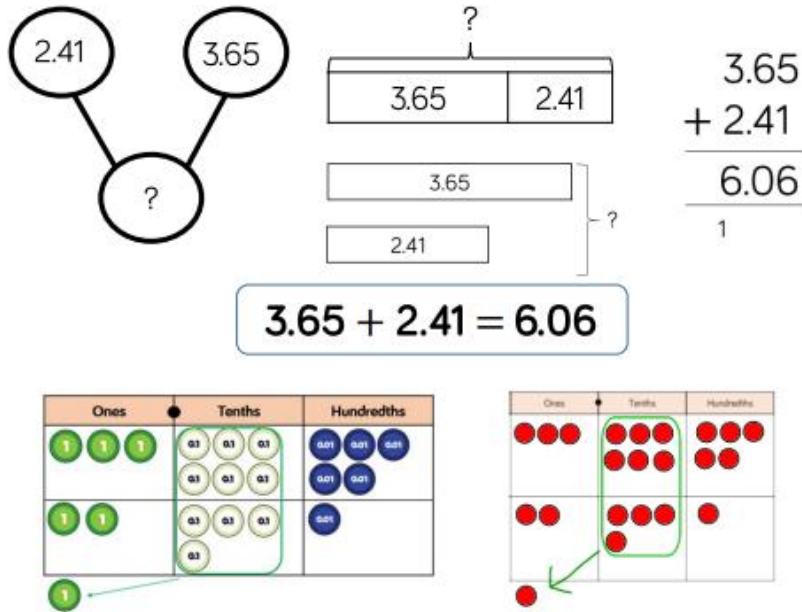
They should know to apply their knowledge of number bonds to add more efficiently eg.  $8 + 5 = 13$  so  $38 + 5 = 43$ .

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



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

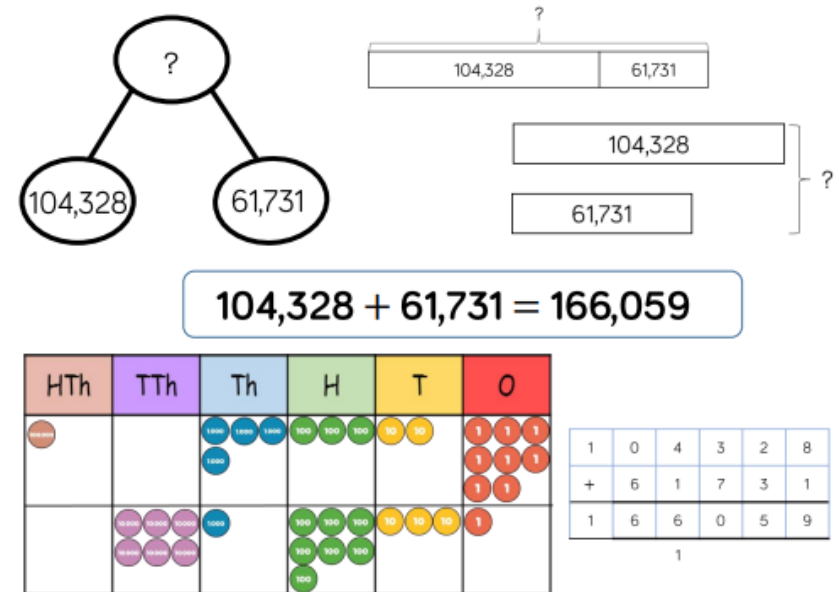
<p><b>Year 2 –</b> Add two 2-digit numbers to 100</p>	<p>At this stage, encourage children to use the formal column methods when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.</p> <p>Children can also use a blank number line to cont. on to find the total. Encourage them to jump to multiples of 10 to become more efficient</p>	<p><math>38 + 23 = 61</math></p>
<p><b>Year 3 –</b> Add numbers with up to 3 digits</p>	<p>Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 3 digits.</p> <p>Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.</p> <p>Plain counters on a place value grid can also be used to support learning.</p>	<p><math>265 + 164 = 429</math></p>

<p><b>Year 4 –</b> Add numbers with up to four digits</p>	<p>Base 10 and place value counters are the most effective manipulatives when adding numbers with up to 4 digits.</p> <p>Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.</p> <p>Plain counters on a place value grid can also be used to support learning</p>	
<p><b>Year 4 –</b> Add with up to 3 decimal places</p>	<p>Place Value counters or 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>	

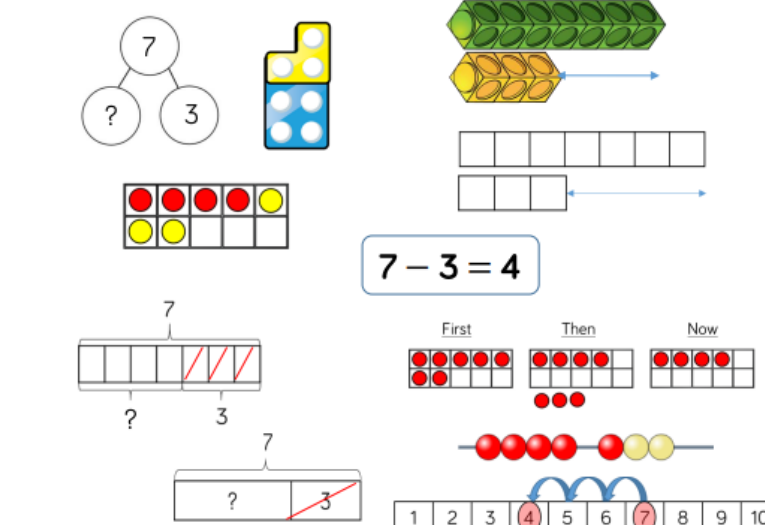
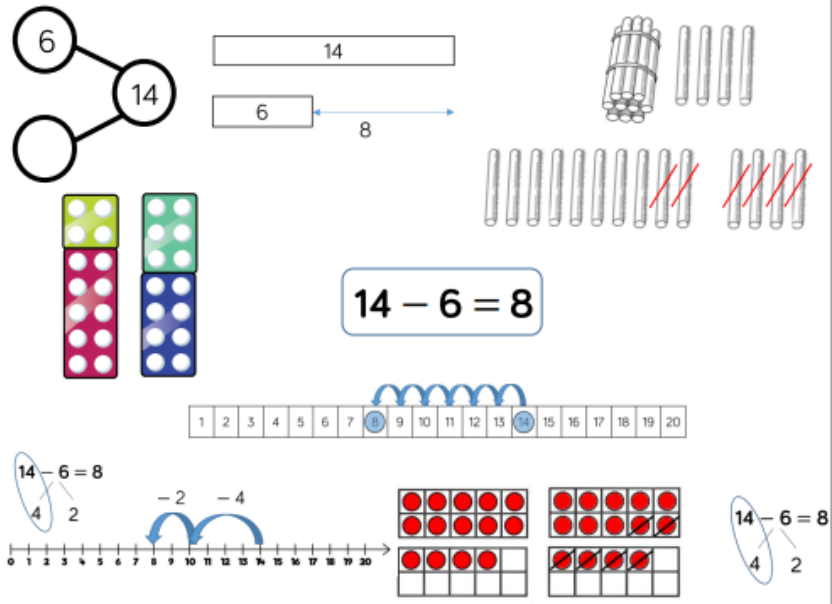
<p><b>Year 5–</b> Add numbers with more than 4 digits</p>
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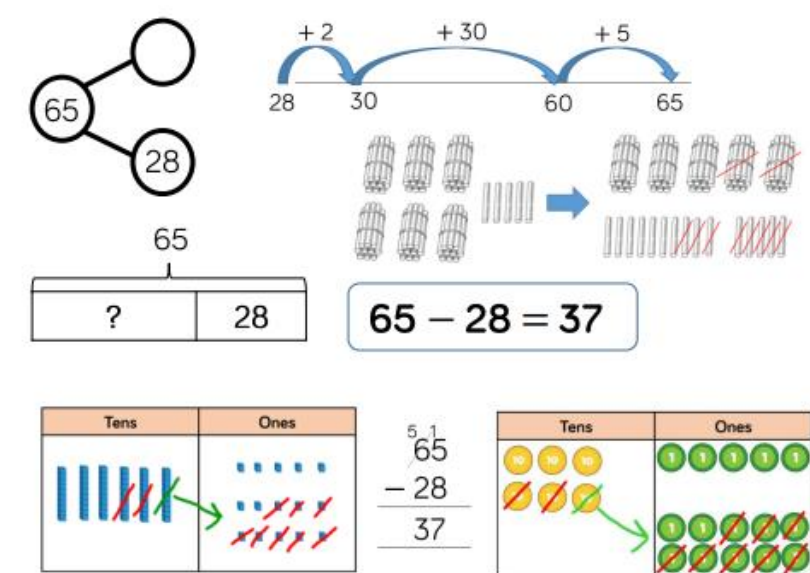
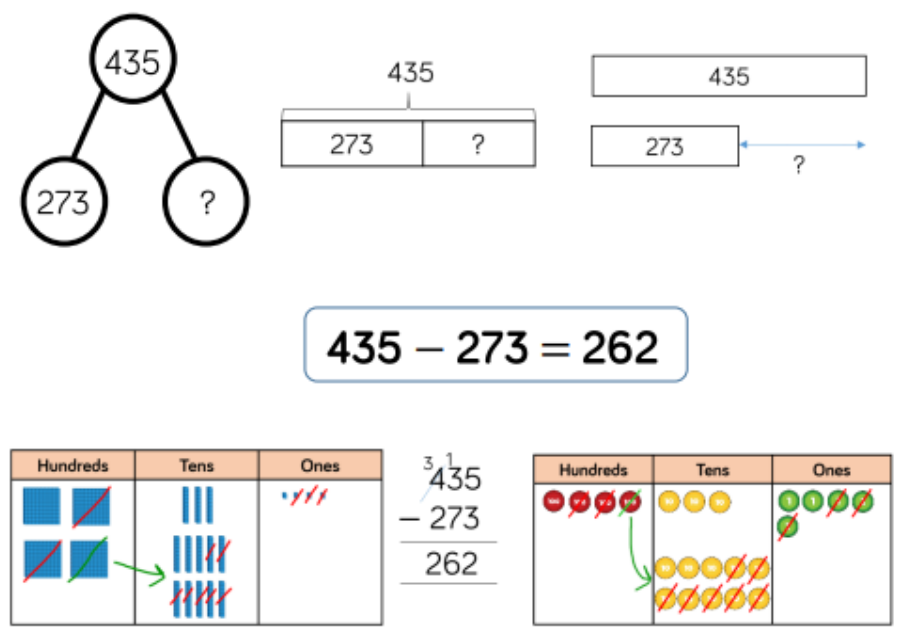
Place Value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.

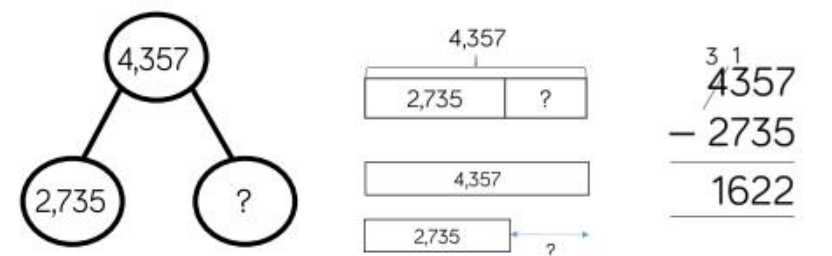
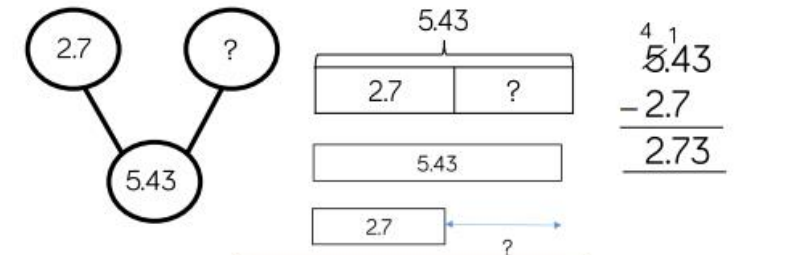
At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.



## Subtraction

Skill	Information	Representations
<b>Year 1 –</b> Subtract 1-digit numbers within 10	<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>	 <p>7 – 3 = 4</p>
<b>Year 1 –</b> Subtract 1 and 2-digit numbers to 20	<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>	 <p>14 – 6 = 8</p>

<p><b>Year 2 –</b> Subtract 1 and 2-digit numbers to 100</p>	<p>At this stage, encourage children to use 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 multiples of 10 to become more efficient.</p>	 <p>65</p> <p>28</p> <p>65</p> <p>?</p> <p>28</p> <p><math>65 - 28 = 37</math></p> <p>Tens Ones</p> <p>65</p> <p>– 28</p> <p>37</p> <p>Tens Ones</p> <p>65</p> <p>– 28</p> <p>37</p>
<p><b>Year 3 –</b> Subtract numbers with up to 3 digits</p>	<p>Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits.</p> <p>Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.</p> <p>Plain counters on a place value grid can also be used to support learning.</p>	 <p>435</p> <p>273</p> <p>?</p> <p>435</p> <p>273</p> <p>?</p> <p><math>435 - 273 = 262</math></p> <p>Hundreds Tens Ones</p> <p>435</p> <p>– 273</p> <p>262</p> <p>Hundreds Tens Ones</p> <p>435</p> <p>– 273</p> <p>262</p>

<p><b>Year 4 –</b> Subtract numbers with up to 4 digits</p>	<p>Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 4 digits.</p> <p>Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.</p> <p>Plain counters on a place value grid can also be used to support learning.</p>	 <p>The diagram illustrates the subtraction of 2,735 from 4,357. It includes a number line showing the difference, a place value chart with blue and red counters, and a written column method showing the subtraction of 2,735 from 4,357 to get 1,622.</p> <p><math>4,357 - 2,735 = 1,622</math></p>
<p><b>Year 4 –</b> Subtract with up to 3 decimal places</p>	<p>Place value counters and plain counters on a place value grid are the most effective manipulative when subtracting decimals with 1, 2 and then 3 decimal places.</p> <p>Ensure children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money or other measures.</p>	 <p>The diagram illustrates the subtraction of 2.7 from 5.43. It includes a number line showing the difference, a place value chart with green and red counters, and a written column method showing the subtraction of 2.7 from 5.43 to get 2.73.</p> <p><math>5.43 - 2.7 = 2.73</math></p>

**Year 5** – Subtract numbers with more than 4 digits

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.

The diagram illustrates the subtraction of 182,501 from 294,382. At the top, a number line shows 294,382 as the starting point, with 182,501 marked below it, and a bracket indicating the difference. Below this, a place value grid is shown with columns for HTh, TTh, Th, H, T, and O. The grid contains counters for each number, with some counters crossed out to show the subtraction process. To the right of the grid, a small table shows the column-wise subtraction of the digits.

294,382

182,501

?

294,382

182,501

?

**294,382 – 182,501 = 111,881**

	HTh	TTh	Th	H	T	O
294,382	2	9	4	3	8	2
- 182,501	1	8	2	5	0	1
	1	1	1	8	8	1