

# Early Years Number Sense



We are born with an innate ability to process small quantities visually. The Early Years Number Sense programme meets children at this starting point of subitising one and two, and develops a deep understanding of all the quantities to ten. The programme develops subitising, manipulating, and partitioning of numbers to 10, and supports children to see their different properties. The programme's systematic approach provides a coherent teaching sequence to develop a deep understanding of numbers to 10.

## Strand 1: Cardinality & Subitising

<b>Book 1</b>	<b>Book 2</b>	<b>Book 3</b>	<b>Book 4</b>	<b>Book 5</b>
Subitising 1 and 2	Subitising 1 to 3	Subitising 1 to 4	Subitising 1 to 5	Subitising 6 to 10

## Strand 2: Partitioning & Composition

<b>Book 6</b>	<b>Book 7</b>	<b>Book 8</b>	<b>Book 9</b>	<b>Book 10</b>	<b>Book 11</b>
Partitioning 2	Partitioning 3	Partitioning 4	Partitioning 5	Partitioning 10	Composition of 6 to 9

## Strand 3: Comparison & Numerical Patterns

<b>Book 12</b>	<b>Book 13</b>
Comparing quantities to 10	Patterns in numbers to 10

# Number Facts Fluency Program



The programme builds on our innate ability to process quantities visually with graphics that expose mathematical structures. With animations and exercises with visual scaffolding, and a wide range of practical activities, a deep understanding of number and quantity is developed.

The facts and strategies are brought together in a six stage teaching programme. Each stage of the programme is broken down into smaller teaching steps, with resources provided for every step. The resources for each step include

- Teaching Points which explain what children need to learn in each step, and the models used
- Activities, for both the classroom and at home, which consolidate concepts
- Animations that expose mathematical structure and develop number sense
- Exercises that build progressively with scaffolding for children and talking tips to support teachers and parents

Stage	Year	Focus of stage
<b>Stage 1</b> Visual Number Foundations	Year 1	<ul style="list-style-type: none"> <li>Building a deep and visual understanding of numbers 1-10</li> <li>Subitising quantities 1 – 5, and subitising structured arrangements for quantities 6-10</li> <li>Recognising quantities 1-10 twos-wise and fives-wise on tens frames</li> </ul>
		Assessment check point
		<ul style="list-style-type: none"> <li>Exploring the different ways that every number to 10 can be broken into parts and put back together</li> <li>Starting to remember some facts</li> <li>Introducing addition and subtraction equations</li> </ul>
<ul style="list-style-type: none"> <li>Learning calculation strategies for adding and subtracting within 10</li> <li>Learning to use what you know to work out what you don't yet know</li> <li>Achieving fluency in addition and subtraction facts within 10</li> </ul>		
Assessment check point		
<ul style="list-style-type: none"> <li>Building a deep and visual understanding of the numbers and quantities 11 to 20</li> <li>Understanding the concept of place value</li> <li>Learning the Ten and a Bit calculation strategy</li> </ul>		
<b>Stage 2</b> Make and Break Numbers to 10	Year 2	<ul style="list-style-type: none"> <li>Learning the remaining calculation strategies</li> <li>Practicing strategy selection to promote efficient and flexible thinking</li> <li>Achieving fluency in addition and subtraction facts across 10</li> </ul>
<b>Stage 3</b> Facts and Strategies within 10		Assessment check point
<b>Stage 4</b> Ten and A Bit		<ul style="list-style-type: none"> <li>Learning to extend and apply key facts and strategies to addition and subtraction calculations involving 2-digit numbers</li> </ul>
<b>Stage 5</b> Facts and Strategies across 10		Assessment check point
<b>Stage 6</b> Extending Facts and Strategies		<ul style="list-style-type: none"> <li>Review and consolidation of Stage 5 and Stage 6 to secure fluency in facts across 10 and in 2-digit mental calculation</li> </ul>
<b>Consolidation</b>		Year 3 Autumn Term

# Number Facts Fluency Program

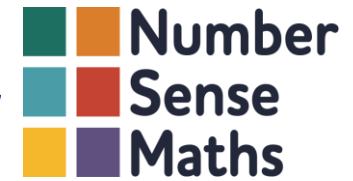


At the core of the programme are the Addition and Subtraction Fact Grids. These essential facts are the equivalent of times tables for addition and subtraction. Just as all multiplication and division calculations use root times table facts, all future addition and subtraction calculations use these root addition and subtraction facts.

+	0	1	2	3	4	5	6	7	8	9	10
0	0+0	0+1	0+2	0+3	0+4	0+5	0+6	0+7	0+8	0+9	0+10
1	1+0	1+1	1+2	1+3	1+4	1+5	1+6	1+7	1+8	1+9	1+10
2	2+0	2+1	2+2	2+3	2+4	2+5	2+6	2+7	2+8	2+9	2+10
3	3+0	3+1	3+2	3+3	3+4	3+5	3+6	3+7	3+8	3+9	3+10
4	4+0	4+1	4+2	4+3	4+4	4+5	4+6	4+7	4+8	4+9	4+10
5	5+0	5+1	5+2	5+3	5+4	5+5	5+6	5+7	5+8	5+9	5+10
6	6+0	6+1	6+2	6+3	6+4	6+5	6+6	6+7	6+8	6+9	6+10
7	7+0	7+1	7+2	7+3	7+4	7+5	7+6	7+7	7+8	7+9	7+10
8	8+0	8+1	8+2	8+3	8+4	8+5	8+6	8+7	8+8	8+9	8+10
9	9+0	9+1	9+2	9+3	9+4	9+5	9+6	9+7	9+8	9+9	9+10
10	10+0	10+1	10+2	10+3	10+4	10+5	10+6	10+7	10+8	10+9	10+10

-	0	1	2	3	4	5	6	7	8	9	10
0	0-0										
1	1-0	1-1									
2	2-0	2-1	2-2								
3	3-0	3-1	3-2	3-3							
4	4-0	4-1	4-2	4-3	4-4						
5	5-0	5-1	5-2	5-3	5-4	5-5					
6	6-0	6-1	6-2	6-3	6-4	6-5	6-6				
7	7-0	7-1	7-2	7-3	7-4	7-5	7-6	7-7			
8	8-0	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8		
9	9-0	9-1	9-2	9-3	9-4	9-5	9-6	9-7	9-8	9-9	
10	10-0	10-1	10-2	10-3	10-4	10-5	10-6	10-7	10-8	10-9	10-10
11		11-1	11-2	11-3	11-4	11-5	11-6	11-7	11-8	11-9	11-10
12			12-2	12-3	12-4	12-5	12-6	12-7	12-8	12-9	12-10
13				13-3	13-4	13-5	13-6	13-7	13-8	13-9	13-10
14					14-4	14-5	14-6	14-7	14-8	14-9	14-10
15						15-5	15-6	15-7	15-8	15-9	15-10
16							16-6	16-7	16-8	16-9	16-10
17								17-7	17-8	17-9	17-10
18									18-8	18-9	18-10
19										19-9	19-10
20											20-10

# Number Facts Fluency Program



The core facts are taught alongside 12 calculation strategies. Learning and applying these strategies gives children a deep understanding of number and number relationships. Using these strategies children can then "use what they know to work out what they don't know". Explicit teaching of derived fact strategies is an effective route to fluency in addition and subtraction facts for all children, including lower attainers.

<p><b>One More, One Less</b></p>	<p>When we add one, we get the next counting number. When we subtract one, we get the previous counting number (e.g. <math>5 - 1 = 4</math>).</p>	<p><b>Number Neighbours: Spot the Difference</b></p>	<p>Adjacent numbers have a difference of 1. Adjacent odds and evens have a difference of 2.</p> <p>Spot number neighbours (adjacent, odds or evens) to solve subtractions of adjacent numbers (e.g. <math>5 - 4 = 1</math>), of adjacent odds (e.g. <math>9 - 7 = 2</math>) or adjacent evens (e.g. <math>6 - 4 = 2</math>).</p>
<p><b>Two More, Two Less: Think Odds and Evens</b></p>	<p>If we add two to a number, we go from odd to next odd or even to next even. If we subtract two from a number, we go from odd to previous odd or even to previous even.</p>	<p><b>7 Tree and 9 Square</b></p>	<p>Use these visual images to remember addition and subtractions fact families that children can find tricky. For example, visualising the 7 tree helps remember that <math>7 - 3 = 4</math>. Visualising the 9 square helps remember that <math>3 + 6 = 9</math>.</p>
<p><b>Number 10 Fact Families</b></p>	<p>Go beyond just recalling the pairs of numbers that add to 10. Make sure that we can also spot additions and subtractions which we can use number bonds to 10 to solve.</p>	<p><b>Ten and A Bit</b></p>	<p>The numbers 11 – 20 are made up of 'Ten and a Bit'. Recognising and understanding the 'Ten and a Bit' structure of these numbers enables addition and subtraction facts involving their constituent parts (e.g. <math>3 + 10 = 13</math>, <math>17 - 7 = 10</math>, <math>12 - 10 = 2</math>).</p>
<p><b>Five and A Bit</b></p>	<p>The numbers 6, 7, 8 and 9 are made up of 'five and a bit'. This can be shown on hands, and supports decomposition of these numbers into their five and a bit parts (e.g. <math>5 + 3 = 8</math>, <math>9 - 5 = 4</math>).</p>	<p><b>Make Ten and Then...</b></p>	<p>Additions which cross the 10 boundary can be calculated by 'Making Ten' first, and then adding on the remaining amount (e.g. <math>8 + 6</math> can be calculated by thinking '<math>8 + 2 = 10</math> and 4 more makes 14'). The same strategy can be applied to subtractions through 10.</p>
<p><b>Know about 0</b></p>	<p>When we add 0 to or subtract 0 from another number, the total remains the same. If we subtract a number from itself, the difference is 0.</p>	<p><b>Adjust It</b></p>	<p>Any addition and subtraction can be calculated by adjusting from a fact you know already, (e.g. <math>6 + 9</math> is one less than <math>6 + 10</math>).</p>
<p><b>Doubles and Near Doubles</b></p>	<p>Memorise doubles of numbers to 10, using a visual approach. Then use these known double facts to calculate near doubles and hidden doubles. Once we know <math>6 + 6 = 12</math> then <math>6 + 7</math> and <math>5 + 7</math> is easy.</p>	<p><b>Swap It</b></p>	<p>When the order of two numbers being added (addends) is exchanged the total remains the same. E.g. <math>1 + 8 = 8 + 1</math>. Sometimes reversing the order of the two addends makes addition easier to think about conceptually.</p>



# Times Tables Fluency Program



The fluency programme is taught through five stages. Each stage is broken down into smaller teachings units, with resources provided for each unit.

Stage 1: Programme Foundations	Unit 1 Doubles						
Stage 2: Essential Facts Set 1 (21 facts)	Unit 1 2 Times Table	Unit 2 Square Times Table	Unit 3 5 Times Table	Unit 4 Consolidation			
Stage 3: Essential Facts Set 2 (15 facts)	Unit 1 Recap	Unit 2 3 Times Table	Unit 3 4 Times Table	Unit 4 6 Times Table	Unit 5 7 Times Table	Unit 6 8 Times Table	Unit 7 9 Times Table
Stage 4: MTC preparation	Unit 1 More squares	Unit 2 10 & 11 Times Tables	Unit 3 12 Times Table	Unit 4 MTC Preparation			
Stage 5: Consolidation	Unit 1 Consolidation to 9 x 9	Unit 2 Consolidation to 12 x 12					