



# Whole School Maths Curriculum Overview: Year 3

#TheSmawthorneExperience



Year 3	Autumn Term		
Topic	Place Value	Addition and subtraction	Multiplication and division A
<b>The Big Ideas</b>	<p>The value of a digit is determined by its position in a number.</p> <p>Place value is based on unitising, treating a group of things as one 'unit'. This generalises to 3 units + 2 units = 5 units (where the units are the same size).</p>	<p>Relating numbers to 5 and 10 helps develop knowledge of the number bonds within 20. For example, given <math>8 + 7</math>, thinking of 7 as <math>2 + 5</math>, and adding the 2 and 8 to make 10, then the 5 to 15. This should then be applied when calculating with larger numbers.</p> <p>Subtraction bonds can be thought of in terms of addition: for example, in answering <math>15 - 8</math>, thinking what needs to be added to 8 to make 15. Counting on for subtraction is a useful strategy that can also be applied to larger numbers.</p>	<p>It is important for children not just to be able to chant their multiplication tables but also to understand what the facts in them mean, to be able to use these facts to figure out others and to use in problems. It is also important for children to be able to link facts within the tables (e.g. <math>5 \times</math> is half of <math>10 \times</math>).</p> <p>They understand what multiplication means, see division as both grouping and sharing, and see division as the inverse of multiplication.</p>
<b>Key Knowledge and Skills</b>	<ul style="list-style-type: none"> <li>• Represent numbers to 100</li> <li>• Partition numbers to 100</li> <li>• Number line to 100</li> <li>• Hundreds</li> <li>• Represent numbers to 1,000</li> <li>• Partition numbers to 1,000</li> <li>• Flexible partitioning of numbers to 1,000</li> <li>• Hundreds, tens and ones</li> <li>• Find 1, 10 or 100 more or less</li> <li>• Number line to 1,000</li> <li>• Estimate on a number line to 1,000</li> <li>• Compare numbers to 1,000</li> <li>• Order numbers to 1,000</li> <li>• Count in 50s</li> </ul>	<ul style="list-style-type: none"> <li>• Apply number bonds within 10</li> <li>• Add and subtract 1s</li> <li>• Add and subtract 10s</li> <li>• Add and subtract 100s</li> <li>• Spot the pattern</li> <li>• Add 1s across a 10</li> <li>• Add 10s across a 100</li> <li>• Subtract 1s across a 10</li> <li>• Subtract 10s across a 100</li> <li>• Make connections</li> <li>• Add two numbers (no exchange)</li> <li>• Subtract two numbers (no exchange)</li> <li>• Add two numbers (across a 10)</li> <li>• Add two numbers (across a 100)</li> <li>• Subtract two numbers (across a 10)</li> <li>• Subtract two numbers (across a 100)</li> <li>• Add 2-digit and 3-digit numbers</li> <li>• Subtract a 2-digit number from a 3-digit number</li> <li>• Complements to 100</li> <li>• Estimate answers</li> <li>• Inverse operations</li> <li>• Make decisions</li> </ul>	<ul style="list-style-type: none"> <li>• Multiplication - equal groups</li> <li>• Use arrays</li> <li>• Multiples of 2</li> <li>• Multiples of 5 and 10</li> <li>• Sharing and grouping</li> <li>• Multiply by 3</li> <li>• Divide by 3</li> <li>• The 3 times-table</li> <li>• Multiply by 4</li> <li>• Divide by 4</li> <li>• The 4 times-table</li> <li>• Multiply by 8</li> <li>• Divide by 8</li> <li>• The 8 times-table</li> <li>• The 2, 4 and 8 times-tables</li> </ul>

## Stem Sentences

- There are \_\_\_ tens and \_\_\_ ones.
  - The number is \_\_\_\_\_
  - The \_\_\_ represents \_\_\_ groups of 10.
  - The \_\_\_ represents \_\_\_ extra ones
  - One part is \_\_\_\_\_. The other part is \_\_\_\_\_.
  - \_\_\_ tens and \_\_\_ ones is the same as \_\_\_ tens and \_\_\_ ones.
  - The start point is \_\_\_ and the end point is \_\_\_\_\_.
  - There are \_\_\_ intervals on the number line.
  - Each interval is worth \_\_\_\_\_.
  - The number line is counting up in \_\_\_\_\_ >
  - There are \_\_\_ tens in hundred and \_\_\_ hundreds in \_\_\_\_\_.
  - This means there are \_\_\_ tens in \_\_\_\_\_.
  - \_\_\_ has \_\_\_ hundreds, \_\_\_ tens and \_\_\_ ones.
  - \_\_\_\_\_ = \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_
- If the whole is \_\_\_ and one part is \_\_\_\_, then the other part is \_\_\_\_\_.
  - \_\_\_\_\_ + \_\_\_\_\_ = 10, so \_\_\_\_\_ + \_\_\_\_\_ = 100.
  - If I know that \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_, then I also know . . .
  - \_\_\_\_\_ ones plus/minus \_\_\_\_\_ ones is equal to \_\_\_\_\_ ones.
  - When adding or subtracting 1s to or from a number, the digit in the \_\_\_ column always changes.
  - The tens column will increase/decrease by . . .
  - \_\_\_\_\_ ones/tens/hundreds plus/minus ones/tens/hundreds is equal to \_\_\_\_\_ ones/tens/hundreds.
  - The next multiple of 10 after \_\_\_\_\_ is \_\_\_\_\_
  - \_\_\_\_\_ can be partitioned into \_\_\_\_\_ and \_\_\_\_\_.
  - I need to add \_\_\_\_\_ to get to the next 10, and then add another \_\_\_\_\_.
- There are \_\_\_ equal groups with \_\_\_\_\_ altogether.
  - • The groups are equal because ...
  - There are \_\_\_ lots of \_\_\_\_\_
  - \_\_\_\_\_ X \_\_\_\_\_ = \_\_\_\_\_ X \_\_\_\_\_
  - The next multiple of 2 is \_\_\_\_\_ 4
  - The previous multiple of 2 is \_\_\_\_\_
  - • I know \_\_\_\_\_ is even because ...
  - • The next multiple of 5/10 is \_\_\_\_\_
  - The previous multiple of 5/10 is \_\_\_\_\_
  - I know \_\_\_\_\_ is a multiple of 5/10 because ...
  - \_\_\_\_\_ has been shared equally into \_\_\_\_\_.
  - There are \_\_\_ groups of \_\_\_ equal groups. in \_\_\_\_\_
  - This question is sharing/grouping because ...
  - There are \_\_\_\_\_ groups. in each group. altogether.
  - • \_\_\_\_\_ x 3 = \_\_\_\_\_ x 3 + \_\_\_\_\_ x 3

<p><b>National Curriculum Statements</b></p>	<p>Count from 0 in multiples of 4, 8, 50 and 100; find 10 or 100 more or less than a given number. Recognise the place value of each digit in a three-digit number (hundreds, tens, ones). Compare and order numbers up to 1000.</p> <p>Identify, represent and estimate numbers using different representations. Read and write numbers up to 1000 in numerals and in words. Solve number problems and practical problems involving these ideas.</p>	<p>Add and subtract numbers mentally, including: a three-digit number and ones a three-digit number and tens a three-digit number and hundreds Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction. Estimate the answer to a calculation and use inverse operations to check answers. Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction.</p>	<p>Recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables. Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. Solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.</p>
<p><b>Misconception</b></p>	<ul style="list-style-type: none"> <li>• Children may count 1 ten as 1 rather than 10 Using bundles of straws is useful here as children can physically count out 10 ones and then bundle them to make 1 ten.</li> <li>• When asked to draw, children can often draw too much detail. Ensure you give clear instructions, for example a line means 1 ten; a dot means 1 one.</li> <li>• Children may not recognise that when there are 10 or Key questions</li> <li>• How have the beads been grouped? How does this help you to count?</li> <li>• Is it quicker to count in ones or tens?</li> <li>• How many tens do you have? How many ones do you have?</li> <li>• How many ones make 1 ten?</li> <li>• How else can you show this number?</li> <li>Possible sentence stems</li> <li>• There are The number is</li> <li>• The tens and represents The represents ones.</li> <li>groups of ten. extra ones. National Curriculum links representations</li> <li>• Identify, represent and estimate numbers using different more ones they need to make an exchange.</li> <li>• When representing a 2-digit number, children may not understand that tens and ones have a different value. For example, they may use 5 ones to represent 50 instead of using 5 tens.</li> <li>• Children may complete a part-whole model or number sentence incorrectly, forgetting the zero that is needed to represent tens, for example <math>58 = 5 + 8</math> instead of <math>58 = 50 + 8</math></li> <li>• Representations may be interpreted incorrectly, for example <math>40 + 2 = 402</math>.</li> <li>• Children may assume that all number lines count in 1s or 10s and hence incorrectly label the divisions.</li> <li>• Children may count the number of divisions, rather than the intervals.</li> <li>• Children may not recognise or distinguish</li> </ul>	<ul style="list-style-type: none"> <li>• Instead of recalling number facts, children may continue to rely on using fingers or manipulatives to add two numbers together.</li> <li>• When using related facts of bonds to 10 to find bonds to 100, children may not increase all three numbers by a factor of 10.</li> <li>• Children may add to or subtract from the incorrect column in a number, for example <math>123 + 1 = 223</math></li> <li>• Children may incorrectly adjust a known number fact when one number is increased by 1, for example <math>57 - 5 = 52</math>, so <math>57 - 6 = 53</math>; children may assume that because 5 has increased by 1, the answer should too. Children may identify the incorrect place value column, particularly if using plain counters in a place value chart, for example <math>230 + 20 = 430</math> or <math>232</math>. If they are left with zero hundreds, for example <math>736 - 700</math>, children may write 036. It is important to address why they do not require the leading zero.</li> <li>• Children need to be able to identify the next multiple of 10</li> <li>• Children may not be able to fluently partition a 1-digit number to work out how much further they need to jump from the multiple of 10</li> <li>• Children may rely on counting on in 1s or using fingers, rather than using more efficient strategies to jump to and from the next multiple of 10</li> </ul>	<ul style="list-style-type: none"> <li>• Children need to ensure that the arrays are drawn or constructed accurately, using straight rows and columns to clearly show repeated addition.</li> <li>• Children may not complete the rectangle when building an array. For example, when representing <math>4 \times 5</math> they may only show the 14 counters that would form the outside of the array and not fill in the middle.</li> <li>• Children may not be confident with the 2 times-table facts.</li> <li>• Children may not just focus on the ones digit when identifying if a number is odd or even.</li> <li>• Children may need reminding what the term "multiple" means.</li> <li>• When counting in 5s, children may miss numbers out, particularly with numbers over 50</li> <li>• Children may need reminding what the term "multiple" means.</li> <li>• Children may think that because all multiples of 10 are multiples of 5, then all multiples of 5 are also multiples of 10</li> <li>• Children may not understand the difference between sharing and grouping.</li> <li>• Support may be needed so that children use the correct language of sharing or grouping to match the picture they are describing.</li> <li>• Children may not be able to correctly interpret their answers in the context of the question.</li> </ul>

	<p>between a 10 piece and a 100 piece in base 10, and count each piece as "1" • Children may not be using the most efficient method of counting.</p>		
<p><b>Progression</b></p>	<p><b><u>Year 2:</u></b> •          Recognise the place value of each digit in two-digit numbers, and compose and decompose two-digit numbers using standard and nonstandard partitioning.          • Reason about the location of any twodigit number in the linear number system, including identifying the previous and next multiple of 10.</p> <p><b><u>Year 4:</u></b> • Know that 10 hundreds are equivalent to 1 thousand, and that 1,000 is 10 times the size of 100; apply this to identify and work out how many 100s there are in other four-digit multiples of 100. •          Recognise the place value of each digit in four-digit numbers, and compose and decompose four-digit numbers using standard and nonstandard partitioning.          • Reason about the location of any fourdigit number in the linear number system, including identifying the previous and next multiple of 1,000 and 100, and rounding to the nearest of each. • Divide 1,000 into 2,</p>	<p><b><u>Year 2:</u></b>          • Add and subtract across 10 • Recognise the subtraction structure of 'difference' and answer questions of the form, "How many more...?". • Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract only ones or only tens to/from a twodigit number. • Add and subtract within 100 by applying related one-digit addition and subtraction facts: add and subtract any 2 twodigit numbers.</p> <p><b><u>Year 4:</u></b> • add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate • estimate and use inverse operations to check answers to a calculation • solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why.</p>	<p><b><u>Year 2:</u></b> •          recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers • calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (<math>\times</math>), division (<math>\div</math>) and equals (=) signs • show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot • solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</p> <p><b><u>Year 4:</u></b> • recall multiplication and division facts for multiplication tables up to <math>12 \times 12</math> • use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by</p>

	4, 5 and 10 equal parts, and read scales/number lines marked in multiples of 1,000 with 2, 4, 5 and 10 equal parts.		1; multiplying together three numbers • recognise and use factor pairs and commutativity in mental calculations multiply two-digit and three-digit numbers by a one-digit number using formal written layout solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects
<b>Key Vocabulary</b>	units, ones, tens, hundreds digit, one-, two- or three-digit number, 'teens' number place, place value, stands for, represents, exchange the same number as, as many as, equal to Of two objects/amounts: greater, more, larger, bigger less, fewer, smaller Of three or more objects/amounts: greatest, most, biggest, largest, least, fewest, smallest, one more, ten more, <b>one hundred more</b> , one less, ten less, <b>one hundred less</b> , compare, order, size, first, second, third... tenth... twentieth, twenty-first, twenty- second..., last, last but one, before, after, next between, half-way between, above, below	+, add, addition, more, plus, make, sum, total Altogether, score, double, near double, one more, two more... ten more... one hundred more how many more to make...? how many more is... than...? how much more is...? -, subtract, subtraction, take (away), minus leave, how many are left/left over? one less, two less... ten less... one hundred less how many fewer is... than...? how much less is...? difference between, half, halve =, equals, sign, is the same as, tens boundary, <b>hundreds boundary</b>	lots of, groups of ´, times, multiply, <b>multiplication</b> , multiplied by, multiple of, <b>product</b> , once, twice, three times... ten times..., times as (big, long, wide... and so on), repeated addition, array, row, column, double, halve, share, share equally, one each, two each, three each...

\*Red words are the newly taught vocabulary.