

# Thomas Hickman School: Calculation Policy

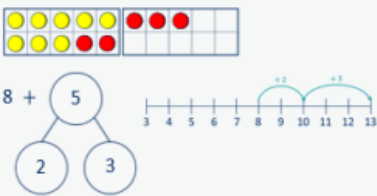
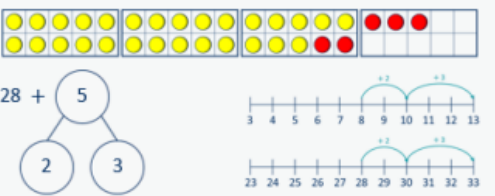
## (Linked to Progression of Skills document)



### Guidance for teachers

The calculation policy is divided into four sections: addition, subtraction, multiplication and division. At the start of each section, you will find an **overview of the progression of skills**. Calculations involving decimal numbers and fractions are included. The calculation policy follows the same **concrete, pictorial, abstract approach** as our main schemes of learning. Where appropriate, *sentence stems and key questions are included alongside the key representations*. Where skills are divided into more than one section across the page, there is a **progression in the level of difficulty from left to right**. For example, when adding across a 10, children need to be able to add across 10 itself, before making links with related facts.

For example:

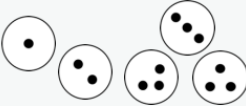
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| <b>Add across a 10</b><br><br>Partition the number you are adding to make a full ten. | <p>... can be partitioned into ... and ...</p>  | <p>I add ... to get to ... then I add ...</p> <p><math>8 + 5 = 13</math><br/><math>28 + 5 = 33</math></p>  |
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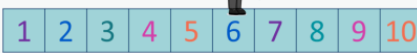
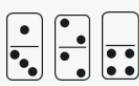
# Progression of skills - Addition

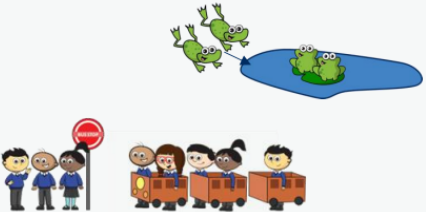
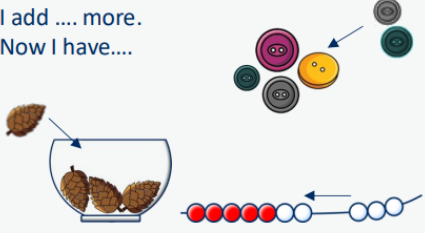
| Year group | Skill                                                                                                                                                                                                                                                                                                                                                       |
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| Nursery    | <ul style="list-style-type: none"> <li>• Subitise to 3</li> <li>• Count how many</li> <li>• Make numbers to 5</li> <li>• Add 1 more (through songs and rhymes)</li> </ul>                                                                                                                                                                                   |
| Reception  | <ul style="list-style-type: none"> <li>• Conceptually subitise to 5</li> <li>• 1 more</li> <li>• Notice the composition of numbers within 10</li> <li>• Combine 2 groups</li> <li>• Add more</li> </ul>                                                                                                                                                     |
| Year 1     | <ul style="list-style-type: none"> <li>• Add together</li> <li>• Add more</li> <li>• Bonds within 10</li> <li>• Related facts within 20</li> <li>• Missing numbers</li> </ul>                                                                                                                                                                               |
| Year 2     | <ul style="list-style-type: none"> <li>• Add 1s to any number (related facts)</li> <li>• Add three 1-digit numbers</li> <li>• Add across a 10</li> <li>• Add multiples of 10</li> <li>• Add 10s to any number</li> <li>• Add two 2-digit numbers (not across a ten)</li> <li>• Add two 2-digit numbers (across a ten)</li> <li>• Missing numbers</li> </ul> |
| Year 3     | <ul style="list-style-type: none"> <li>• Add 1s, 10s and 100s to a 3-digit number</li> <li>• Add two numbers (no exchange)</li> <li>• Add two numbers across a 10 or 100</li> <li>• Complements to 100</li> <li>• Add fractions with the same denominator within 1 whole</li> <li>• Calculate the duration of events</li> </ul>                             |

|        |                                                                                                                                                                                                                                                                                                    |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 4 | <ul style="list-style-type: none"> <li>• Add 1s, 10s and 100s to a 4-digit number</li> <li>• Add up to two 4-digit numbers</li> <li>• Add decimal numbers in the context of money</li> <li>• Add fractions and mixed numbers with the same denominator beyond 1 whole</li> </ul>                   |
| Year 5 | <ul style="list-style-type: none"> <li>• Add using mental strategies</li> <li>• Add whole numbers with more than 4 digits</li> <li>• Add decimals with up to 2 decimal places</li> <li>• Complements to 1</li> <li>• Add fractions with denominators that are a multiple of one another</li> </ul> |
| Year 6 | <ul style="list-style-type: none"> <li>• Add integers up to 10 million</li> <li>• Add decimals with up to 3 decimal places</li> <li>• Order of operations</li> <li>• Negative numbers</li> <li>• Add fractions</li> </ul>                                                                          |

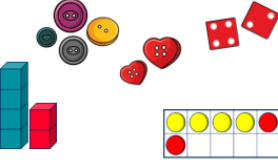
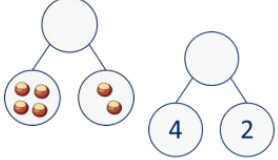
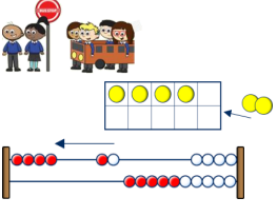
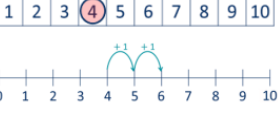
## Calculation Policy – Addition

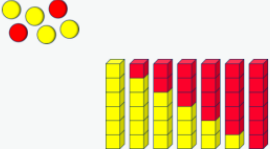
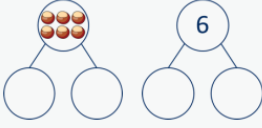
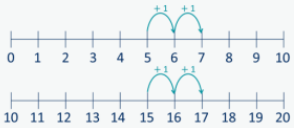
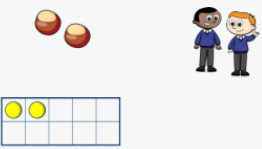
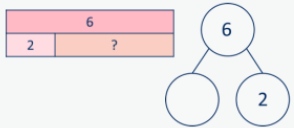
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| <b>Nursery</b>                                                                | <ul style="list-style-type: none"> <li>Begin to have an understanding of numbers to 5</li> <li>We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Progression of skills</b>                                                  | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Subitise to 3</b><br><br>Instantly see how many.                           | How many do you see?         |                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Count how many</b><br><br>Begin to count objects using 1-1 correspondence. | How many are there?<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Count out ... from a larger group.<br>E.g. Collect 3 beanbags for a game.                                                                                                                                    |
| <b>Make numbers to 5</b><br><br>Start by showing 1, 2 and 3 using fingers.    | Show me...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Begin to link numerals to quantities.     |
| <b>Add 1 more</b><br><br>Through stories, songs and rhymes.                   | How many do I have now?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                    |

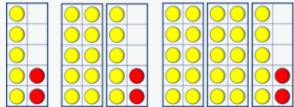
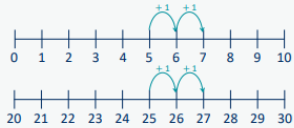
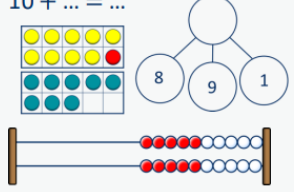
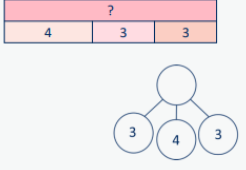
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| <b>Reception</b>                                                                             | <ul style="list-style-type: none"> <li>Have a deep understanding of numbers to 10, including the composition of each number.</li> <li>Subitise (recognise quantities without counting) up to 5</li> <li>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.</li> </ul>                                                                                                         |                                                                                                                                                                                                                                                                                                  |
| <b>Progression of skills</b>                                                                 | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                  |
| <b>Conceptually subitise to 5</b><br><br>Notice the parts that make up the whole.            | What do you see?<br>How do you see it?      |                                                                                                                                                                                                                                                                                                  |
| <b>1 more</b><br><br>Continue to link to stories, songs and rhymes.                          | 1 more than ... is ...                                                                                                          |                                                                                                                                                                                                                                                                                                  |
| <b>Notice the composition of numbers within 10</b><br><br>Link to stories, songs and rhymes. | How many...?<br>How many...?<br>How many altogether?                                                                                | How many ways can you make...?    |

| Progression of skills                                                   | Key representations                                                                                                                              |                                                                                                                                             |
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| <b>Combine 2 groups</b><br><br>2 groups are combined to find the total. | There are ....<br>There are ....<br>There are .... altogether.  | .... and .... make ....<br><br>                           |
| <b>Add more</b><br><br>A quantity is increased.                         | First... Then... Now...<br><br>                                 | I have ....<br>I add .... more.<br>Now I have....<br><br> |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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| <b>Year 1</b> | <ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving addition (+) and equals (=) signs.</li> <li>Represent and use number bonds within 20</li> <li>Add 1-digit and 2-digit numbers to 20, including zero.</li> <li>Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square + 2</math></li> </ul> |
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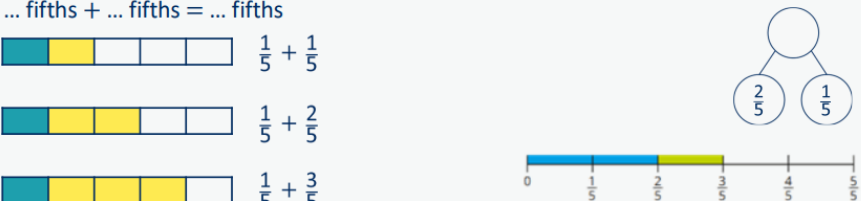
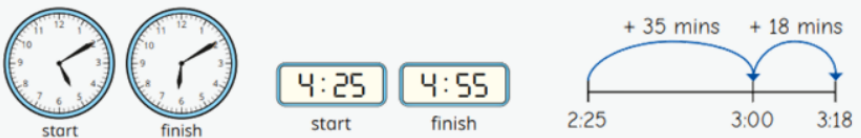
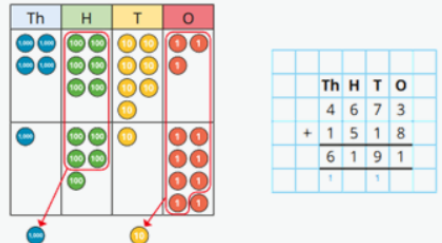
| Progression of skills                                                                 | Key representations                                                                                                                             |                                                                                                                                              |                                                                                                                               |
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| <b>Add together (aggregation)</b><br><br>2 quantities are combined to find the total. | There are ...<br>There are ...<br>There are ... altogether.  | ... is a part.<br>... is a part.<br>... is the whole.    | ... plus ... is equal to ...<br>... is equal to ... + ...<br><br>$4 + 2 = 6$<br>$2 + 4 = 6$<br><br>$6 = 4 + 2$<br>$6 = 2 + 4$ |
| <b>Add more (augmentation)</b><br><br>A quantity is increased.                        | First... Then... Now...<br><br>                              | I start at ...<br>I jump on ...<br>I land on ...<br><br> | ... plus ... is equal to ...<br>... is equal to ... + ...<br><br>$4 + 2 = 6$<br>$2 + 4 = 6$<br><br>$6 = 4 + 2$<br>$6 = 2 + 4$ |

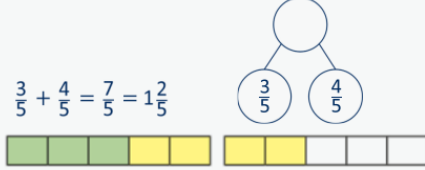
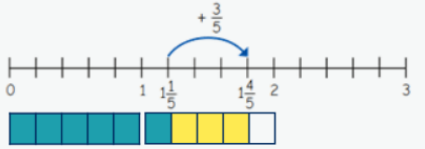
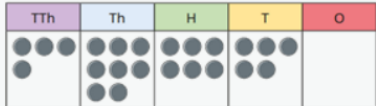
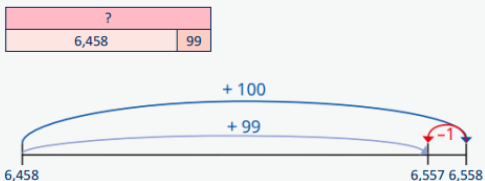
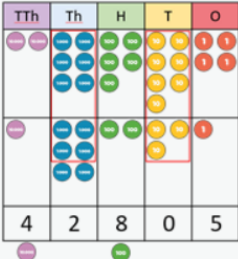
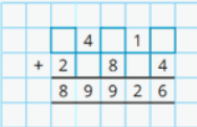
| Progression of skills                                                                                               | Key representations                                                                                                                            |                                                                                                                                                            |                                                                                                                                                                       |
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| <b>Bonds within 10</b><br><br>Include bonds for each number within 10<br><br>Encourage children to notice patterns. | ... is made of ... and ...<br>... and ... make ...<br><br>    | ... can be partitioned into ... and ...<br><br>                          | ... plus ... is equal to ...<br><br>$6 + 0 = 6$<br>$5 + 1 = 6$<br>$4 + 2 = 6$<br>$3 + 3 = 6$<br>$2 + 4 = 6$<br>$1 + 5 = 6$<br>$0 + 6 = 6$                             |
| <b>Related facts within 20</b><br><br>Make links to known facts.                                                    | I know that ... and ... = ...<br>so ... and ... = ...<br><br> | ... more than ... is ...<br>so ... more than ... is ...<br><br>          | What patterns do you notice?<br><br>$5 + 2 = 7$<br>$15 + 2 = 17$<br><br>$7 = 5 + 2$<br>$17 = 15 + 2$                                                                  |
| <b>Missing numbers</b><br><br>Make links to known facts.                                                            | How many more do you need to make ...?<br><br>                | If ... is the whole and ... is a part, the other part must be...<br><br> | ... plus ... is equal to ...<br><br>$2 + \square = 6$<br>$6 = 2 + \square$<br><br> |

| <b>Year 2</b>                                                                                                                                  | <ul style="list-style-type: none"> <li>Recall and use addition facts to 20 fluently, and derive and use related facts up to 100</li> <li>Add numbers using concrete objects, pictorial representations, and mentally, including:               <ul style="list-style-type: none"> <li>a two-digit number and 1s</li> <li>a two-digit number and 10s</li> <li>2 two-digit numbers</li> <li>adding 3 one-digit numbers</li> </ul> </li> <li>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li> </ul> |                                                                                                                                                     |                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| Progression of skills                                                                                                                          | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                     |                                                                                                                           |
| <b>Add ones to any number</b><br>(related facts)<br><br>Make links to known facts.                                                             | I know that ... and ... = ...<br>so ... and ... = ...<br><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                       | ... more than ... is ...<br>so ... more than ... is ...<br><br> | What do you notice?<br>Can you continue the pattern?<br><br>$5 + 2 = 7$<br>$15 + 2 = 17$<br>$25 + 2 = 27...$              |
| <b>Add three 1-digit numbers</b><br><br>Prompt children to understand that addition can be done in any order and to make links to known facts. | ... and ... are a bond to 10<br>$10 + \dots = \dots$<br><br>                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Double ... + ... = ...<br><br>                                  | What do you notice?<br>Which addition is the easiest to calculate?<br><br>$8 + 9 + 1 =$<br>$8 + 1 + 9 =$<br>$9 + 1 + 8 =$ |



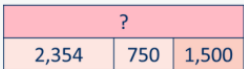
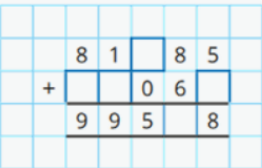
| <b>Year 3</b>                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds.</li> <li>Add numbers with up to three digits, using formal written methods of columnar addition.</li> <li>Add fractions with the same denominator within 1 whole.</li> <li>Calculate the time taken by particular events or tasks.</li> </ul>                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                 |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
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| <b>Progression of skills</b>                                                                                                                                                        | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                 |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| <p><b>Add 1s, 10s or 100s to a 3-digit number</b></p> <p>Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.</p> | <p>The ones/tens/hundreds column will increase by ...</p> <div> <div> <table border="1"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div> <div> <table border="1"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div> </div> <p> <math>444 + 5 =</math><br/> <math>444 + 50 =</math><br/> <math>444 + 500 =</math> </p> <p> <math>777 + 2 =</math><br/> <math>777 + 20 =</math><br/> <math>777 + 200 =</math> </p>                                                                                                                                                                  |                                                                                                                                                                                                                 | Hundreds | Tens | Ones |   |   |   | H | T | O |       |   |   |   |   |   |       |  |  |   |   |   |
| Hundreds                                                                                                                                                                            | Tens                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Ones                                                                                                                                                                                                            |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
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| H                                                                                                                                                                                   | T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | O                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
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| <p><b>Add two numbers (no exchange)</b></p> <p>Mental strategies and introduction of formal written method.</p>                                                                     | <p>... ones + ... ones = ... ones<br/>         ... tens + ... tens = ... tens<br/>         ... hundreds + ... hundreds = ... hundreds</p> <div> <div> </div> <div> <table border="1"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>+</td> <td>4</td> <td>3</td> </tr> <tr> <td colspan="3"><hr/></td> </tr> </tbody> </table> </div> </div> <p> <math>345 + 432 =</math> </p>                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                 | H        | T    | O    | 3 | 4 | 5 | + | 4 | 3 | <hr/> |   |   |   |   |   |       |  |  |   |   |   |
| H                                                                                                                                                                                   | T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | O                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| 3                                                                                                                                                                                   | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| +                                                                                                                                                                                   | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 3                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| <hr/>                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                 |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| <b>Progression of skills</b>                                                                                                                                                        | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                 |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| <p><b>Add two numbers across a 10 or 100</b></p> <p>Formal written method involving up to 2 exchanges including 3-digit plus 2-digit numbers.</p>                                   | <p>There are ... ones, so I do/do not need to make an exchange.<br/>         There are ... tens, so I do/do not need to make an exchange.<br/>         ... ones = ... ten and ... ones.<br/>         ... tens = ... hundred and ... tens.</p> <div> <div> <table border="1"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div> <div> <table border="1"> <thead> <tr> <th>H</th> <th>T</th> <th>O</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>6</td> <td>6</td> </tr> <tr> <td>+</td> <td>3</td> <td>5</td> </tr> <tr> <td colspan="3"><hr/></td> </tr> <tr> <td>8</td> <td>1</td> <td>9</td> </tr> </tbody> </table> </div> </div> <p> <math>466 + 353 =</math> </p> |                                                                                                                                                                                                                 | Hundreds | Tens | Ones |   |   |   | H | T | O | 4     | 6 | 6 | + | 3 | 5 | <hr/> |  |  | 8 | 1 | 9 |
| Hundreds                                                                                                                                                                            | Tens                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Ones                                                                                                                                                                                                            |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
|                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                 |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| H                                                                                                                                                                                   | T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | O                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| 4                                                                                                                                                                                   | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 6                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| +                                                                                                                                                                                   | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 5                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| <hr/>                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                 |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| 8                                                                                                                                                                                   | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 9                                                                                                                                                                                                               |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |
| <p><b>Complements to 100</b></p> <p>Pairs of numbers which total 100</p>                                                                                                            | <p>... plus ... is equal to 100</p> <div> </div> <p> <math>38 + 62 = 100</math><br/> <math>62 + 38 = 100</math><br/> <math>100 = 38 + 62</math><br/> <math>100 = 62 + 38</math> </p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>I add ... to get to the next 10, then ... to get to 100</p> <div> </div> <p> <math>38 + 62 = 100</math><br/> <math>62 + 38 = 100</math><br/> <math>100 = 38 + 62</math><br/> <math>100 = 62 + 38</math> </p> |          |      |      |   |   |   |   |   |   |       |   |   |   |   |   |       |  |  |   |   |   |

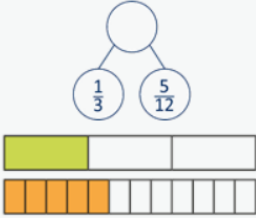
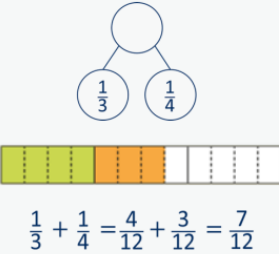
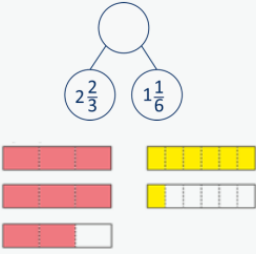
| Progression of skills                                                                                                                                                                 | Key representations                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Add fractions with the same denominator within 1 whole</b><br><br>Make links with known facts.                                                                                     | When adding fractions with the same denominator, I only add the numerator.<br>... fifths + ... fifths = ... fifths<br>                                                                  |                                                                                                                                                                                                                                                    |
| <b>Calculate the duration of events</b><br><br>Find durations of time between a given start and end point. Children will need to calculate complements to 60                          | From ... to ... o'clock is ... minutes.<br>From ... o'clock to ... is ... minutes.<br>The total time taken is ... minutes.<br>                                                          |                                                                                                                                                                                                                                                    |
| <b>Year 4</b>                                                                                                                                                                         | <ul style="list-style-type: none"> <li>Add numbers with up to 4 digits using a formal written method.</li> <li>Solve simple measure and money problems involving fractions and decimals to 2 decimal places.</li> <li>Add fractions with the same denominator.</li> </ul> |                                                                                                                                                                                                                                                    |
| Progression of skills                                                                                                                                                                 | Key representations                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                    |
| <b>Add 1s, 10s and 100s to a 4-digit number</b><br><br>Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.         | The ones/tens/hundreds/thousands column will increase by ...<br><br>$3,425 + 3 =$ $3,425 + 300 =$<br>$3,425 + 30 =$ $3,425 + 3,000 =$                                                  | What patterns do you notice?<br>$2,350 + 3 =$<br>$2,350 + 30 =$<br>$2,350 + 300 =$<br>$2,350 + 3,000 =$<br><br>$6,040 + 200 =$ $2,211 + \square = 2,251$<br>$6,040 + 500 =$ $2,211 + \square = 2,215$<br>$6,040 + 900 =$ $2,211 + \square = 2,511$ |
| <b>Add up to two 4-digit numbers</b><br><br>Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations. | There are ... ones/tens/hundreds so I do/do not need to make an exchange.<br><br>I can exchange 10 ... for 1 ...<br>                                                                  |                                                                                                                                                                                                                                                    |

| Progression of skills                                                                                                                                      | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Add decimal numbers in the context of money</b></p> <p>Emphasis on partitioning and use of number lines rather than formal written calculations.</p> | <p>... pence + ... pence = ... pence<br/>... pounds + ... pounds = ... pounds</p>  <p>45p + 25p = 70p<br/>£2 + £3 = £5<br/>£5 + 70p = £5.70</p>                                                                                                                                                                                                                                    | <p>£3.25 can be partitioned into £3 + 20p + 5p</p>    |
| <p><b>Add fractions and mixed numbers with the same denominator beyond 1 whole</b></p>                                                                     | <p>When adding fractions with the same denominator, I only add the numerator.<br/>... fifths + ... fifths = ... fifths</p>                                                                                                                                                                       |                                                                                                                                         |
| <p><b>Year 5</b></p>                                                                                                                                       | <ul style="list-style-type: none"> <li>• Add whole numbers with more than 4 digits, including using formal written methods.</li> <li>• Add numbers mentally with increasingly large numbers.</li> <li>• Add decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1</li> <li>• Add fractions with the same denominator, and denominators that are multiples of the same number.</li> </ul> |                                                                                                                                         |
| Progression of skills                                                                                                                                      | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                         |
| <p><b>Add using mental strategies</b></p> <p>Add 1s, 10s, 100s, etc. to any number.<br/>Use number bonds and related facts.</p>                            |  <p>48,650 + 300 =<br/>48,650 + 30,000 =<br/>48,650 + 30 =</p>                                                                                                                                                                                                                                                                                                                   | <p>To add ..., I can add ... then subtract ...</p>  |
| <p><b>Add whole numbers with more than 4 digits</b></p> <p>Encourage children to estimate and use inverse operations to check answers to calculations.</p> | <p>I can exchange 10 ... for 1 ...</p>                                                                                                                                                                |                                                                                                                                         |

| Progression of skills                                                                                                                                                                      | Key representations                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Add decimals with up to 2 decimal places</b></p> <p>Progress from the same number of decimal places to a different number of decimal places, and from no exchange to exchange.</p>   | <p>I do/do not need to make an exchange because ...<br/>I can exchange 10 ... for 1 ...</p>                                                                                                                                                                                     |
| <p><b>Complements to 1</b></p> <p>Pairs of numbers with up to 3 decimal places which total 1</p> <p>Encourage children to make links with bonds to 10 and complements to 100 and 1,000</p> | <p> <math>0.3 + \square = 1</math>    <math>0.35 + \square = 1</math> </p> <p> <math>4 + 6 = 10</math>    <math>0.4 + 0.6 = 1</math><br/> <math>44 + 56 = 100</math>    <math>0.44 + 0.56 = 1</math><br/> <math>444 + 556 = 1,000</math>    <math>0.444 + 0.556 = 1</math> </p> |

| Progression of skills                                                                                                                                                                                                                                           | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Add fractions with denominators that are a multiple of one another</b></p> <p>Encourage children to convert fractions to the same denominator before adding.</p> <p>Progress from adding fractions within 1 whole to adding fractions beyond 1 whole.</p> | <p>The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.</p> <p> <math>\frac{1}{2} + \frac{1}{8} = \frac{4}{8} + \frac{1}{8} = \frac{5}{8}</math> </p> <p> <math>\frac{1}{4} + \frac{3}{8} = \frac{2}{8} + \frac{3}{8} = \frac{5}{8}</math> </p> <p> <math>\frac{3}{4} + \frac{5}{8} = \frac{6}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}</math> </p> |

|                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Year 6</b>                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Add larger numbers, using the formal written method of columnar addition.</li> <li>Use their knowledge of the order of operations to carry out calculations involving the 4 operations.</li> <li>Calculate intervals across zero.</li> <li>Add fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</li> </ul> |
| <b>Progression of skills</b>                                                                                                                                                                               | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Add integers up to 10 million</b><br><br>Encourage children to estimate and use inverse operations to check answers to calculations.                                                                    | <br><br>                                                                                                                                       |
| <b>Add decimals with up to 3 decimal places</b><br><br>Progress to numbers with digits in different place value columns.<br><br>Encourage children to check that they have lined up the columns correctly. | I do/do not need to make an exchange because ...<br>                                                                                                                                                                                                                                                                                                                                                 |

| Progression of skills                                                                                                                                                                                             | Key representations                                                                                                                                                                 |                                                                                                                                                                                                                     |                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Add fractions</b></p> <p>Convert fractions to the same denominator before adding. Progress from fractions where one denominator is a multiple of the other, to any fractions and then to mixed numbers.</p> | <p>The denominator has been multiplied by ..., so the numerator needs to be multiplied by ...</p>  | <p>The lowest common multiple of ... and ... is ...</p>  $\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$ | <p>...is made up of ... wholes and ...</p>  |

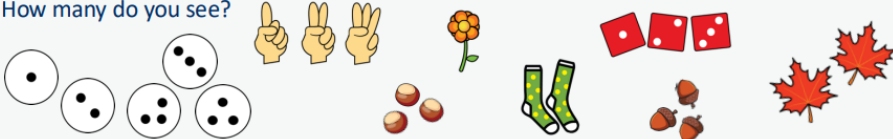
# Progression of skills - Subtraction

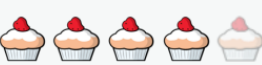
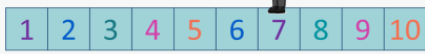
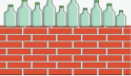
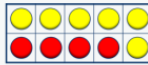
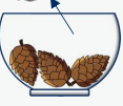
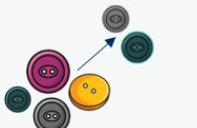
| Year group | Skill                                                                                                                                                                                             |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nursery    | <ul style="list-style-type: none"> <li>• Subitise to 3</li> <li>• Count how many</li> <li>• Make numbers to 5</li> <li>• Take 1 away (through songs and rhymes)</li> </ul>                        |
| Reception  | <ul style="list-style-type: none"> <li>• Conceptually subitise to 5</li> <li>• 1 less</li> <li>• Notice the composition of numbers within 10</li> <li>• Partition</li> <li>• Take away</li> </ul> |
| Year 1     | <ul style="list-style-type: none"> <li>• Find a part</li> <li>• Take away</li> <li>• Bonds within 10</li> <li>• Related facts within 20</li> <li>• Missing numbers</li> </ul>                     |

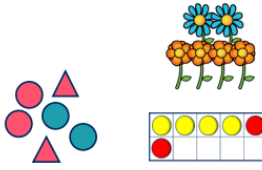
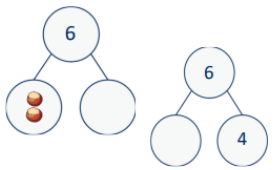
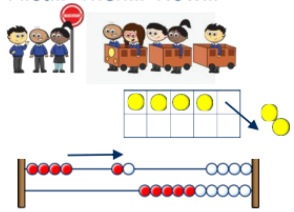
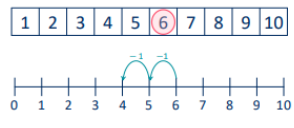
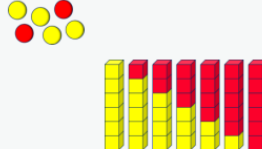
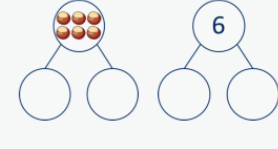
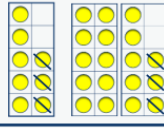
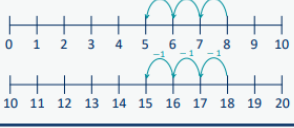
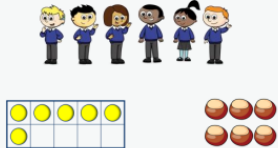
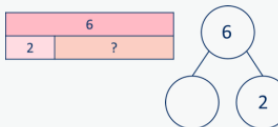
| Year group | Skill                                                                                                                                                                                                                                                                                                                                                    |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 2     | <ul style="list-style-type: none"> <li>• Subtract 1s from any number (related facts)</li> <li>• Subtract across a 10</li> <li>• Subtract multiples of 10</li> <li>• Subtract 10s from any number</li> <li>• Subtract two 2-digit numbers (not across a ten)</li> <li>• Subtract two 2-digit numbers (across a ten)</li> <li>• Missing numbers</li> </ul> |
| Year 3     | <ul style="list-style-type: none"> <li>• Subtract 1s, 10s and 100s from a 3-digit number</li> <li>• Subtract two numbers (no exchange)</li> <li>• Subtract two numbers across a 10 or 100</li> <li>• Complements to 100</li> <li>• Subtract fractions with the same denominator within 1 whole</li> </ul>                                                |

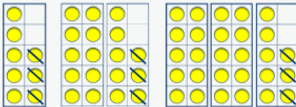
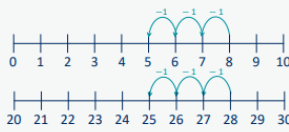
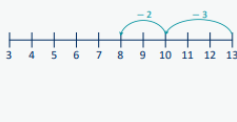
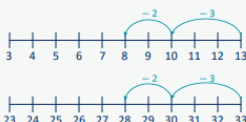
| Year group | Skill                                                                                                                                                                                                                                                                                                                  |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 4     | <ul style="list-style-type: none"> <li>• Subtract 1s, 10s, 100s and 1,000s from a 4-digit number</li> <li>• Subtract up to two 4-digit numbers</li> <li>• Subtract decimal numbers in the context of money</li> <li>• Subtract fractions and mixed numbers with the same denominator</li> </ul>                        |
| Year 5     | <ul style="list-style-type: none"> <li>• Subtract whole numbers with more than 4 digits</li> <li>• Subtract using mental strategies</li> <li>• Subtract decimals with up to 2 decimal places</li> <li>• Complements to 1</li> <li>• Subtract fractions with denominators that are a multiple of one another</li> </ul> |
| Year 6     | <ul style="list-style-type: none"> <li>• Subtract integers up to 10 million</li> <li>• Subtract decimals with up to 3 decimal places</li> <li>• Order of operations</li> <li>• Negative numbers</li> <li>• Subtract fractions</li> </ul>                                                                               |

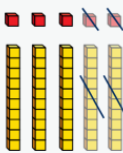
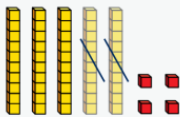
# Subtraction

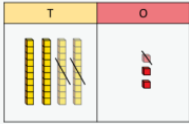
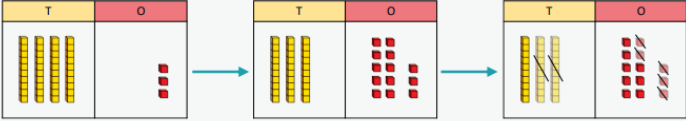
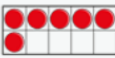
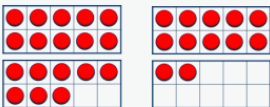
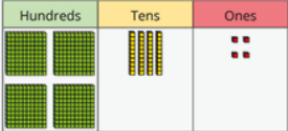
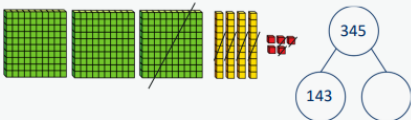
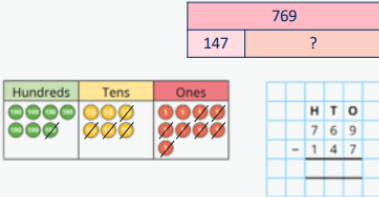
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|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nursery</b>                                                                | <ul style="list-style-type: none"> <li>• Begin to have an understanding of numbers to 5</li> <li>• We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.</li> </ul> |                                                                                                                                                                            |
| <b>Progression of skills</b>                                                  | <b>Key representations</b>                                                                                                                                                                                             |                                                                                                                                                                            |
| <b>Subitise to 3</b><br><br>Instantly see how many.                           | How many do you see?                                                                                                                 |                                                                                                                                                                            |
| <b>Count how many</b><br><br>Begin to count objects using 1-1 correspondence. | How many are there?<br>1 2 3 4 5<br>                                                                                                  | Count out ... from a larger group.<br>E.g. Collect a cup for everyone at the table.<br> |
| <b>Make numbers to 5</b><br><br>Start by showing 1, 2 and 3 using fingers.    | Show me...<br>                                                                                                                        | Begin to link numerals to quantities.<br>                                                |
| <b>Take 1 away</b><br><br>Through stories, songs and rhymes.                  | How many do we have now?<br>                                                                                                       |                                                                                                                                                                            |

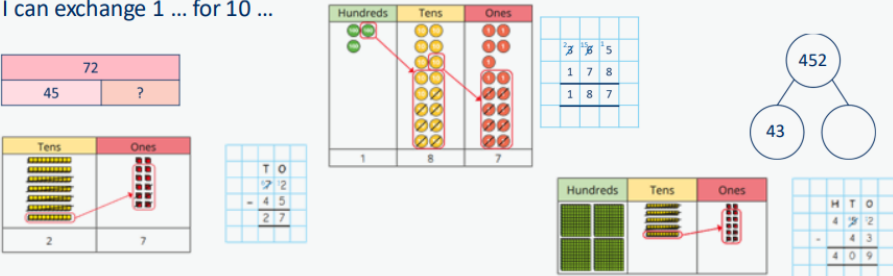
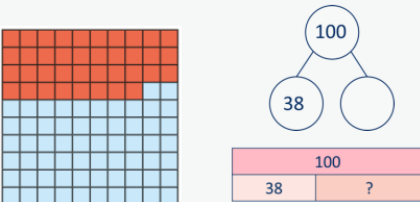
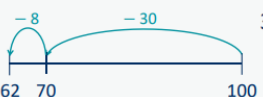
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| <b>Reception</b>                                                                                          | <ul style="list-style-type: none"> <li>Have a deep understanding of number to 10, including the composition of each number.</li> <li>Subitise (recognise quantities without counting) up to 5</li> <li>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (and some subtraction facts) and some number bonds to 10, including double facts.</li> </ul>                                                                                                                                                                                                                                                                                                     |  |
| <b>Progression of skills</b>                                                                              | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| <b>Conceptually subitise to 5</b><br><br>Notice the parts that make up the whole.                         | What do you see?<br>How do you see it?<br><br>                                                                                                                                                                                                                                |  |
| <b>1 less</b><br><br>Continue to link to stories, songs and rhymes.                                       | 1 less than ... is ...<br><br>                                                                                                                                                                                                                                                                                                                                    |  |
| <b>Notice the composition of numbers within 10</b><br><br>Link to stories, songs and rhymes.              | How many...?<br>How many...?<br>How many altogether?<br><br>   How many ways can you make...?<br><br>    |  |
| <b>Progression of skills</b>                                                                              | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |
| <b>Partition</b><br><br>Using objects, explore different ways to partition a number into 2 or more parts. | There are ... altogether.<br>I can see ... here and ... there.<br><br>   ... and ... make ...<br><br>                                                                            |  |
| <b>Take away</b><br><br>A quantity is reduced.                                                            | First... Then... Now...<br><br>   I have ...<br>I take ... away<br>Now I have ...<br><br>                                                                                       |  |

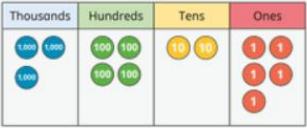
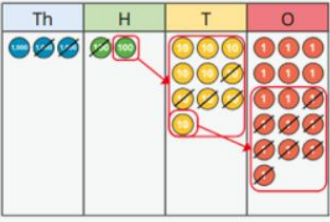
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| <b>Year 1</b>                                                                                                                                   | <ul style="list-style-type: none"> <li>Read, write and interpret mathematical statements involving subtraction (−) and equals (=) signs.</li> <li>Represent and use number bonds and related subtraction facts within 20</li> <li>Subtract one-digit and two-digit numbers to 20, including zero.</li> <li>Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></li> </ul> |                                                                                                                                                              |                                                                                                                                                                          |
| <b>Progression of skills</b>                                                                                                                    | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                              |                                                                                                                                                                          |
| <b>Find a part</b><br><br>Link to number bonds and known facts. E.g. $2 + 4 = 6$ so if 6 is the whole and 4 is a part, the other part must be 2 | There are ... in total.<br>... are ...<br>How many are <b>not</b> ...?<br><br>                                                                                                                                                                                                                                                                                                                                | ... is the whole.<br>... is a part.<br>... is a part.<br><br>              | ... subtract ... is equal to ...<br>... is equal to ... − ...<br><br>$6 - 2 = 4$<br>$6 - 4 = 2$<br><br>$4 = 6 - 2$<br>$2 = 6 - 4$                                        |
| <b>Take away</b><br><br>A quantity is decreased.                                                                                                | First... Then... Now...<br><br>                                                                                                                                                                                                                                                                                                                                                                               | I start at ...<br>I jump back ...<br>I land on ...<br><br>                 | ... minus ... is equal to ...<br>... is equal to ... − ...<br><br>$6 - 2 = 4$<br>$6 - 4 = 2$<br><br>$4 = 6 - 2$<br>$2 = 6 - 4$                                           |
| <b>Progression of skills</b>                                                                                                                    | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                              |                                                                                                                                                                          |
| <b>Bonds within 10</b><br><br>Focus on subtraction facts.<br><br>Encourage children to notice patterns.                                         | ... is made of ... and ...<br>... and ... make ...<br><br>                                                                                                                                                                                                                                                                                                                                                  | ... can be partitioned into ... and ...<br><br>                          | ... minus ... is equal to ...<br><br>$6 - 0 = 6$<br>$6 - 1 = 5$<br>$6 - 2 = 4$<br>$6 - 3 = 3$<br>$6 - 4 = 2$<br>$6 - 5 = 1$<br>$6 - 6 = 0$                               |
| <b>Related facts within 20</b><br><br>Make links to known facts.                                                                                | I know that ... minus ... = ...<br>so ... minus ... = ...<br><br>                                                                                                                                                                                                                                                                                                                                           | ... less than ... is ...<br>so ... less than ... is ...<br><br>          | What patterns do you notice?<br><br>$8 - 3 = 5$<br>$18 - 3 = 15$<br><br>$5 = 8 - 3$<br>$15 = 18 - 3$                                                                     |
| <b>Missing numbers</b><br><br>Make links to known facts.                                                                                        | How many do you need to subtract to make ...?<br><br>                                                                                                                                                                                                                                                                                                                                                       | If ... is the whole and ... is a part, the other part must be...<br><br> | ... minus ... is equal to ...<br><br>$6 - \square = 2$<br>$2 = 6 - \square$<br><br> |

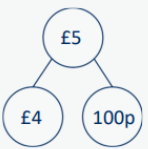
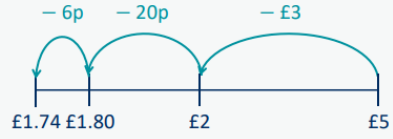
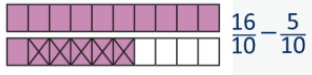
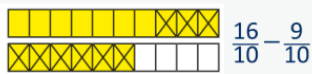
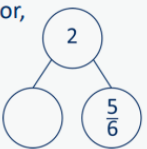
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|                                                                                                   | <ul style="list-style-type: none"><li>Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100</li><li>Subtract numbers using concrete objects, pictorial representations, and mentally, including:<ul style="list-style-type: none"><li>a two-digit number and 1s</li><li>a two-digit number and 10s</li><li>2 two-digit numbers</li></ul></li><li>Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.</li></ul> |                                                                                                                                                                                                                             |                                                                                                              |
| Progression of skills                                                                             | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                             |                                                                                                              |
| <b>Subtract ones from any number</b><br>(related facts)<br><br>Make links to known facts.         | I know that ... minus ... = ...<br>so ... minus ... = ...<br><br>                                                                                                                                                                                                                                                                                                                                                                                                 | ... less than ... is ...<br>so ... less than ... is ...<br><br>                                                                           | What do you notice?<br>Can you continue the pattern?<br><br>$8 - 3 = 5$<br>$18 - 3 = 15$<br>$28 - 3 = 25...$ |
| <b>Subtract across a 10</b><br><br>Partition the number being subtracted to bridge through a ten. | ... can be partitioned into ... and ...<br><br><br>$13 - 5$<br>                                                                                                                                                                                                                                                                                                                  | Make links with related facts.<br><br><br>$33 - 5$<br> |                                                                                                              |

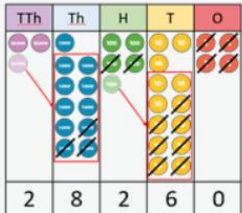
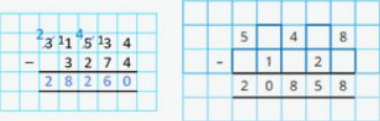
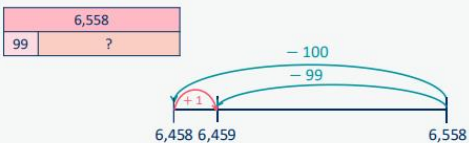
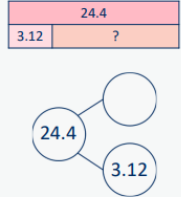
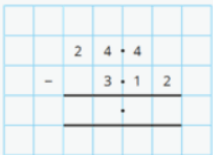
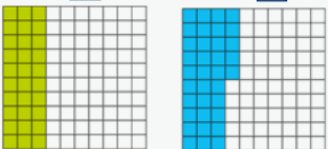
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| Progression of skills                                                        | Key representations                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |
| <b>Subtract multiples of 10</b><br><br>Make links to known facts within ten. | ... ones – ... ones = ... ones<br>so ... tens – ... tens = ... tens<br><br><br>$5 - 2 = 3$<br>$50 - 20 = 30$ | What is the same?<br>What is different?<br><br><br><table border="1"><tr><td colspan="3">5</td></tr><tr><td>2</td><td></td><td>?</td></tr><tr><td colspan="3">50</td></tr><tr><td>20</td><td></td><td>?</td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 5  |    |    | 2  |    | ?  | 50 |   |   | 20 |    | ?  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |
| 5                                                                            |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |
| 2                                                                            |                                                                                                                                                                                                 | ?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |
| 50                                                                           |                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |
| 20                                                                           |                                                                                                                                                                                                 | ?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |
| <b>Subtract 10s from any number</b><br><br>Make links to known facts.        | ... tens – ... tens = ... tens<br>... tens and ... ones = ...<br><br>                                        | To subtract ... I need to subtract 10 ... times.<br><br><table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr><tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr><tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr></table> | 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 | I know that ... minus ... = ...<br>so ... minus ... = ...<br><br>$50 - 20 = 30$<br>$54 - 20 = 34$ |
| 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 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |                                                                                                   |

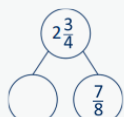
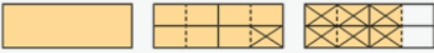
| Progression of skills                                                                                                                                                                   | Key representations                                                                                                                                                                                                                                                                                                                             |                                                                                                                            |                                                                                                                                                                                                                                         |
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| <b>Subtract two 2-digit numbers</b><br>(not across a ten)                                                                                                                               | $\dots \text{ones} - \dots \text{ones} = \dots \text{ones}$<br>$\dots \text{tens} - \dots \text{tens} = \dots \text{tens}$                                                                                                                                                                                                                      |                                          | $3 \text{ ones} - 1 \text{ one} = 2 \text{ ones}$<br>$4 \text{ tens} - 2 \text{ tens} = 2 \text{ tens}$<br>$2 \text{ tens and } 2 \text{ ones} = 22$                                                                                    |
| <b>Subtract two 2-digit numbers</b><br>(across a ten)<br><br>Begin to exchange 1 ten for 10 ones.                                                                                       | I need to make an exchange because I do not have enough ones to subtract $\dots$ ones.                                                                                                                                                                                                                                                          |                                          | $3 \text{ ones} - 5 \text{ ones}$<br>(I need to exchange 1 ten for 10 ones)<br><br>$13 \text{ ones} - 5 \text{ ones} = 8 \text{ ones}$<br>$3 \text{ tens} - 2 \text{ tens} = 1 \text{ ten}$<br>$1 \text{ ten and } 8 \text{ ones} = 18$ |
| <b>Missing numbers</b><br><br>Solve missing number problems and use the inverse to check.                                                                                               | How many do you need to subtract to make $\dots$ ?<br><br> $10 - \square = 6$<br>$6 + \square = 10$                                                                                                                                                            | If $\dots$ is a whole and $\dots$ is a part, then $\dots$ is the other part.<br><br>$7 - 3 = \square$<br>$\square + 3 = 7$ | $\dots$ can be partitioned into $\dots$ and $\dots$<br>$18 - \square = 12 + 2$<br>                                                                   |
| <b>Year 3</b>                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds.</li> <li>Subtract numbers with up to three digits, using formal written methods.</li> <li>Subtract fractions with the same denominator within 1 whole.</li> </ul> |                                                                                                                            |                                                                                                                                                                                                                                         |
| Progression of skills                                                                                                                                                                   | Key representations                                                                                                                                                                                                                                                                                                                             |                                                                                                                            |                                                                                                                                                                                                                                         |
| <b>Subtract 1s, 10s and 100s from a 3-digit number</b><br><br>Emphasis on mental strategies including number bonds and related facts.<br>Prompt children to notice which digit changes. | The ones/tens/hundreds column will decrease by ...                                                                                                                                                                                                                                                                                              |                                         | What patterns do you notice?<br><br>$235 - 3 =$<br>$235 - 30 =$<br>$235 - 300 =$<br><br>$118 - \square = 111$<br>$624 - 20 =$<br>$181 - \square = 111$<br>$654 - 50 =$<br>$811 - \square = 111$                                         |
| <b>Subtract two numbers (no exchange)</b><br><br>Mental strategies and introduction of formal written method.                                                                           | $\dots \text{ones} - \dots \text{ones} = \dots \text{ones}$<br>$\dots \text{tens} - \dots \text{tens} = \dots \text{tens}$<br>$\dots \text{hundreds} - \dots \text{hundreds} = \dots \text{hundreds}$                                                                                                                                           |                                         |                                                                                                                                                    |

| Progression of skills                                                                                                                                      | Key representations                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Subtract two numbers across a 10 or 100</b></p> <p>Formal written method involving up to 2 exchanges including 3-digit subtract 2-digit numbers.</p> | <p>I need to subtract ... ones. I do/do not need to make an exchange.<br/> I need to subtract ... tens. I do/do not need to make an exchange.<br/> I can exchange 1 ... for 10 ...</p>  |                                                                                                                                                                                                                                                                              |
| <p><b>Complements to 100</b></p> <p>Focus on subtraction facts.</p> <p>Encourage children to notice patterns.</p>                                          | <p>100 minus ... is equal to ...</p>                                                                                                                                                     | <p>I subtract ... tens, then I subtract ... ones.</p> <p> <math>100 - 38 = 62</math><br/> <math>100 - 62 = 38</math><br/> <math>62 = 100 - 38</math><br/> <math>38 = 100 - 62</math> </p>  |
| Progression of skills                                                                                                                                      | Key representations                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                              |
| <p><b>Subtract fractions with the same denominator within 1 whole</b></p> <p>Make links with known facts.</p>                                              | <p>When subtracting fractions with the same denominator, I only subtract the numerator.<br/> ... fifths – ... fifths = ... fifths</p>                                                 |                                                                                                                                                                                                                                                                              |

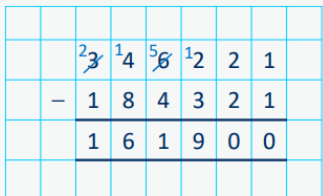
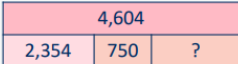
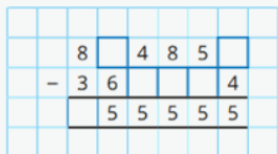
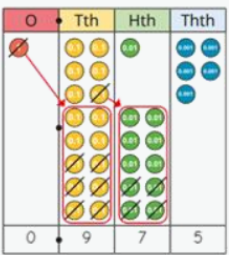
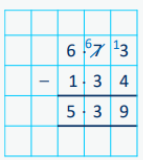
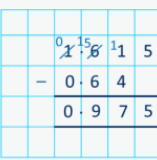
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| <b>Year 4</b>                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Subtract numbers with up to 4 digits using a formal written method.</li> <li>Solve simple measure and money problems involving fractions and decimals to 2 decimal places.</li> <li>Subtract fractions with the same denominator.</li> </ul>            |                                                                                                                                                                                                                                                                                                 |
| <b>Progression of skills</b>                                                                                                                                                                    | <b>Key representations</b>                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                 |
| <b>Subtract 1s, 10s, 100s and 1,000s from a 4-digit number</b><br><br>Emphasis on mental strategies including number bonds and related facts.<br>Prompt children to notice which digit changes. | The ones/tens/hundreds/thousands column will decrease by ...<br> $3,425 - 2 = 3,423$ $3,425 - 20 = 3,405$ $3,425 - 200 = 3,225$                                                                               | What patterns do you notice?<br>$4,356 - 3 = 4,353$<br>$4,356 - 30 = 4,326$<br>$4,356 - 300 = 4,056$<br>$4,356 - 3,000 = 356$<br>$4,433 - \square = 4,430$<br>$6,940 - 200 = 6,740$<br>$6,940 - 300 = 6,640$<br>$6,940 - 400 = 6,540$<br>$4,433 - \square = 4,033$<br>$4,433 - \square = 4,403$ |
| <b>Subtract up to two 4-digit numbers</b><br><br>Formal written method with up to 3 exchanges.<br>Encourage children to estimate and use inverse operations to check answers to calculations.   | I need to subtract... ones/tens/hundreds. I do/do not need to make an exchange.<br><br>I can exchange 1... for 10...<br>  |                                                                                                                                                                                                                                                                                                 |

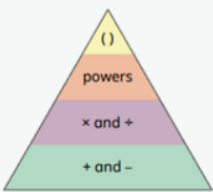
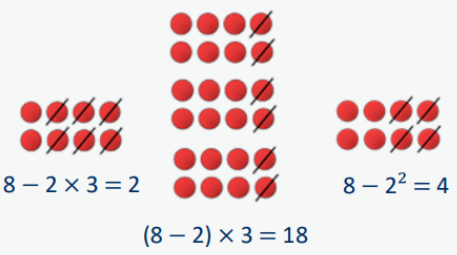
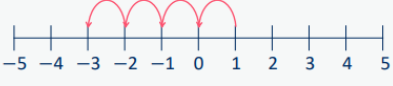
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| <b>Progression of skills</b>                                                                                                                                     | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                         |
| <b>Subtract decimal numbers in the context of money</b><br><br>Emphasis here is on partitioning and use of number lines rather than formal written calculations. | I can partition £... into £... and 100p<br>$\text{£}... - \text{£}... = \text{£}...$<br>$100\text{p} - ...\text{p} = ...\text{p}$<br><br>$\text{£}5 - \text{£}3.26$<br>$\text{£}4 - \text{£}3 = \text{£}1$<br>$100\text{p} - 26\text{p} = 74\text{p}$<br>$\text{£}5 - \text{£}3.26 = \text{£}1.74$                                                                                                                                                                                                                                                                                       | $\text{£}3.26$ can be partitioned into $\text{£}3 + 20\text{p} + 6\text{p}$<br><br> |
| <b>Subtract fractions and mixed numbers with the same denominator</b><br><br>Include subtracting fractions from wholes.                                          | When subtracting fractions with the same denominator,<br>I only subtract the numerator.<br>... tenths - ... tenths = ... tenths<br><br> $\frac{16}{10} - \frac{5}{10} = \frac{11}{10}$  $\frac{16}{10} - \frac{9}{10} = \frac{7}{10}$    |                                                                                                                                                                         |

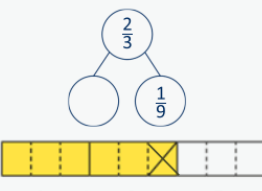
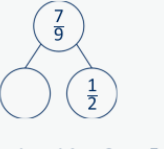
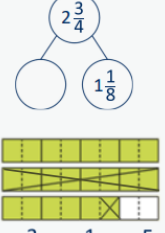
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| <b>Year 5</b>                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Subtract whole numbers with more than 4 digits.</li> <li>Subtract numbers mentally with increasingly large numbers.</li> <li>Subtract decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1</li> <li>Subtract fractions with the same denominator, and denominators that are multiples of the same number.</li> </ul>                      |
| <b>Progression of skills</b>                                                                                                                                                                 | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Subtract whole numbers with more than 4 digits</b></p> <p>Encourage children to estimate and use inverse operations to check answers to calculations.</p>                              | <p>I can exchange 1 ... for 10 ...</p>                                                                                                                                                                                                                                                  |
| <p><b>Subtract using mental strategies</b></p> <p>Subtract 1s, 10s, 100s etc from any number.<br/>Use number bonds and related facts.</p>                                                    |  <p> <math>48,650 - 300 =</math><br/> <math>48,650 - 30,000 =</math><br/> <math>48,650 - 30 =</math> </p> <p>To subtract ..., I can subtract ... then add ...</p>                                                                                                                         |
| <b>Progression of skills</b>                                                                                                                                                                 | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Subtract decimals with up to 2 decimal places</b></p> <p>Progress from the same number of decimal places to a different number of decimal places and from no exchange to exchange.</p> |                                                                                                               |
| <p><b>Complements to 1</b></p> <p>Encourage children to make links with bonds to 10 and complements to 100 and 1,000 when finding a missing part or subtracting from 1</p>                   | <p> <math>0.3 + \square = 1</math>     <math>0.35 + \square = 1</math> </p>   <p> <math>10 - 4 = 6</math>     <math>1 - 0.4 = 0.6</math><br/> <math>100 - 44 = 56</math>     <math>1 - 0.44 = 0.56</math><br/> <math>1,000 - 444 = 556</math>     <math>1 - 0.444 = 0.556</math> </p> |

| Progression of skills                                                                                                                                                                                                                             | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
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| <p><b>Subtract fractions with denominators that are a multiple of one another</b></p> <p>Convert fractions to the same denominator before subtracting. Progress from subtracting fractions within 1 whole to subtracting from a mixed number.</p> | <p>The denominator has been multiplied by ..., so the numerator needs to be multiplied by... for the fractions to be equivalent.</p>   $\frac{2}{3} - \frac{2}{9} = \frac{6}{9} - \frac{2}{9} = \frac{4}{9}$   |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                    |
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| <b>Year 6</b> | <ul style="list-style-type: none"> <li>Subtract larger numbers, using the formal written methods of columnar subtraction.</li> <li>Use their knowledge of the order of operations to carry out calculations involving the 4 operations.</li> <li>Calculate intervals across zero.</li> <li>Subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.</li> </ul> |
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| Progression of skills                                                                                                                                                                         | Key representations                                                                                                                                                                                                                                                                                                   |
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| <p><b>Subtract integers up to 10 million</b></p> <p>Encourage children to estimate and use inverse operations to check answers to calculations.</p>                                           |                                                             |
| <p><b>Subtract decimals with up to 3 decimal places</b></p> <p>Progress from the same number of decimal and whole number places to a different number of decimal and whole number places.</p> | <p>I do/do not need to make an exchange because ...</p>    |

| Progression of skills                                                                                                                                                                                                                   | Key representations                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                    |
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| <b>Order of operations</b><br><br>Children learn the order of priority for operations in a calculation. Calculations in brackets should be done first. Multiplication and division should be performed before addition and subtraction. | ... has greater priority than ... , so the first part of the calculation I need to do is ...<br><br>  |                                                                                                                                                                                                                                    |
| <b>Negative numbers</b><br><br>Children subtract from positive and negative numbers and calculate intervals across 0                                                                                                                    | ... minus ... is equal to ...<br><br> $-1 - 4 = -5$                                                                                                                                     |  The difference between $-5$ and $-1$ is 4<br><br> $1 - 4 = -3$ |

| Progression of skills                                                                                                                                                                                                               | Key representations                                                                                                                                                                                                                                        |                                                                                                                                                                                                                        |                                                                                                                                                                                |
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| <b>Subtract fractions</b><br><br>Convert fractions to the same denominator before subtracting. Progress from fractions where one denominator is a multiple of the other, to any fractions and then subtracting from a mixed number. | The denominator has been multiplied by ..., so the numerator needs to be multiplied by...<br><br> $\frac{2}{3} - \frac{1}{9} = \frac{6}{9} - \frac{1}{9} = \frac{5}{9}$ | The lowest common multiple of ... and ... is ...<br><br> $\frac{7}{9} - \frac{1}{2} = \frac{14}{18} - \frac{9}{18} = \frac{5}{18}$ | ... is made up of ... wholes and ...<br><br> $2\frac{3}{4} - 1\frac{1}{8} = 1\frac{5}{8}$ |

# Progression of skills - Multiplication

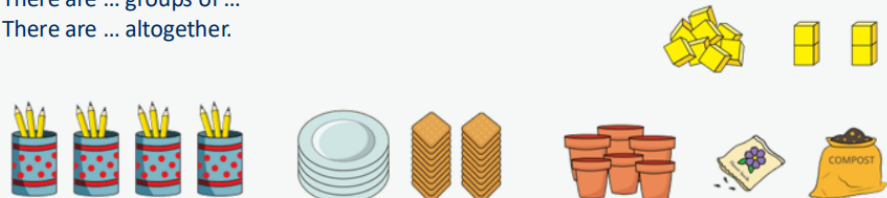
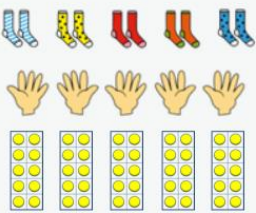
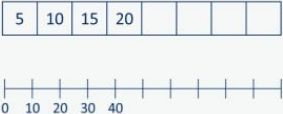
| Year group | Skill                                                                                                                                                                                  |
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| Nursery    | <ul style="list-style-type: none"> <li>Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)</li> </ul> |
| Reception  | <ul style="list-style-type: none"> <li>Double to 10</li> <li>Make equal groups</li> </ul>                                                                                              |
| Year 1     | <ul style="list-style-type: none"> <li>Count in 2s, 5s and 10s</li> <li>Add equal groups</li> <li>Make arrays</li> <li>Make doubles</li> </ul>                                         |

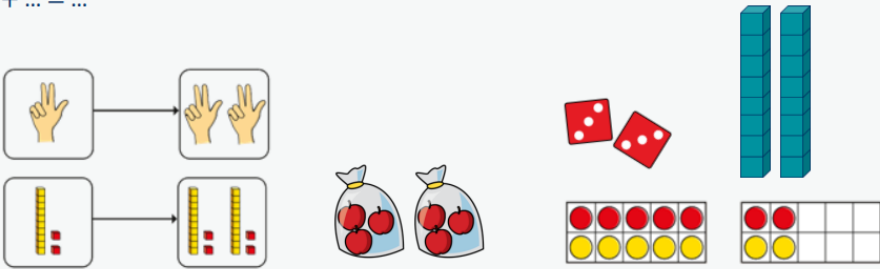
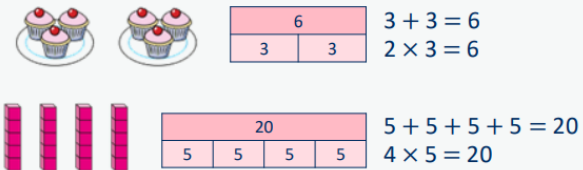
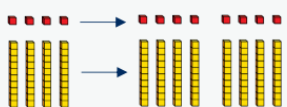
| Year group | Skill                                                                                                                                                                                                                                                                                                                                          |
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| Year 2     | <ul style="list-style-type: none"> <li>Link repeated addition and multiplication</li> <li>Use arrays</li> <li>Double</li> <li>The 2 times-table</li> <li>The 10 times-table</li> <li>The 5 times-table</li> <li>Missing numbers</li> </ul>                                                                                                     |
| Year 3     | <ul style="list-style-type: none"> <li>The 3 times-table</li> <li>The 4 times-table</li> <li>The 8 times-table</li> <li>Related facts</li> <li>Multiply a 2-digit number by a 1-digit number - no exchange</li> <li>Multiply a 2-digit number by a 1-digit number - with exchange</li> <li>Scaling</li> <li>Correspondence problems</li> </ul> |

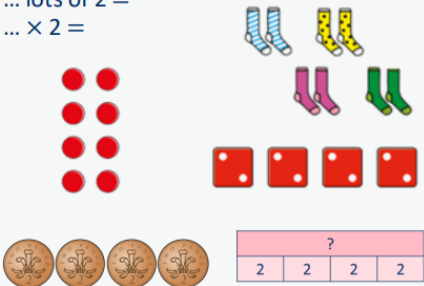
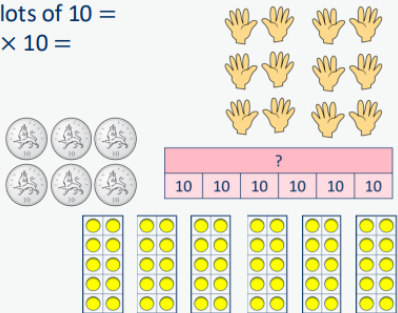
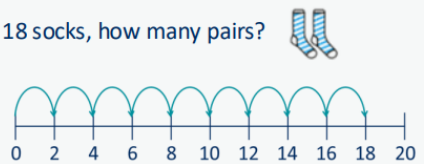
| Year group | Skill                                                                                                                                                                                                                                                                                                                                                                                               |
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| Year 4     | <ul style="list-style-type: none"> <li>• Times-table facts to <math>12 \times 12</math></li> <li>• Multiply by 1 and 0</li> <li>• Multiply 3 numbers</li> <li>• Factor pairs</li> <li>• Multiply by 10 and 100</li> <li>• Related facts</li> <li>• Mental strategies</li> <li>• Multiply a 2 or 3-digit number by a 1-digit number</li> <li>• Scaling</li> <li>• Correspondence problems</li> </ul> |

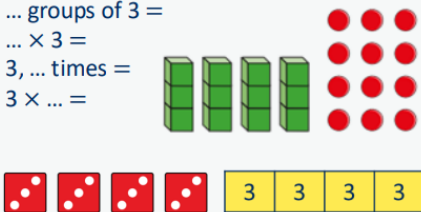
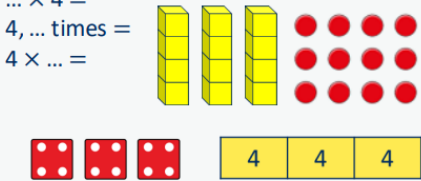
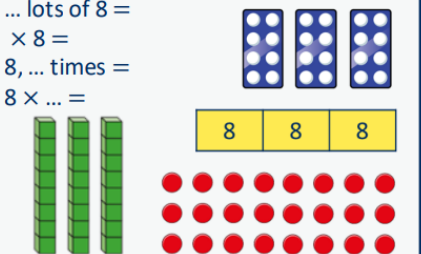
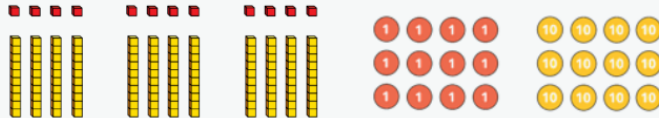
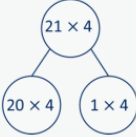
| Year group | Skill                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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| Year 5     | <ul style="list-style-type: none"> <li>• Multiples and factors</li> <li>• Square and cube numbers</li> <li>• Multiply numbers up to 4 digits by a 1-digit number</li> <li>• Multiply numbers up to 4 digits by a 2-digit number</li> <li>• Multiply by 10, 100 and 1,000</li> <li>• Mental strategies</li> <li>• Multiply fractions by a whole number</li> <li>• Multiply mixed numbers by a whole number</li> <li>• Find the whole</li> </ul> |

| Year group | Skill                                                                                                                                                                                                                                                                                                                                 |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 6     | <ul style="list-style-type: none"> <li>• Multiply numbers up to 4 digits by a 2-digit number</li> <li>• Multiply by 10, 100 and 1,000</li> <li>• Order of operations</li> <li>• Multiply decimals by integers</li> <li>• Multiply fractions by fractions</li> <li>• Find the whole</li> <li>• Calculations involving ratio</li> </ul> |

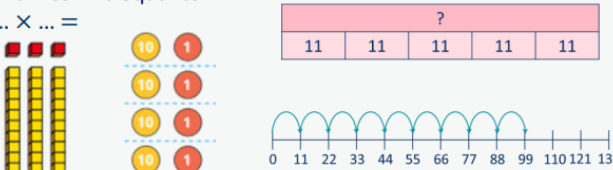
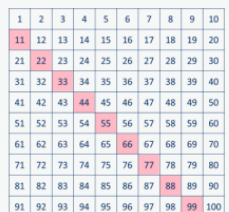
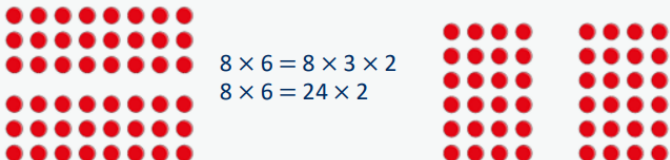
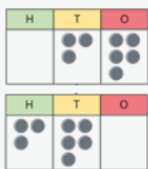
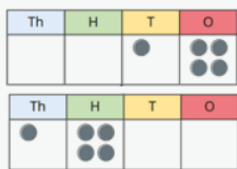
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| <b>Reception</b>                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>Have a deep understanding of number to 10, including the composition of each number.</li> <li>Subitise (recognise quantities without counting) up to 5</li> <li>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.</li> <li>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</li> </ul> |                                                                                                                                           |                                                                                                                                                                                          |
| <b>Progression of skills</b>                                                                                                                                                                            | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                           |                                                                                                                                                                                          |
| <b>Double to 10</b><br><br>Prompt children to notice that double means twice as many and to notice that there are two equal groups.                                                                     | Double ... is ...<br>... is double ...<br>                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                           |                                                                                                                                                                                          |
| <b>Make equal groups</b><br><br>Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.                       | There are ... groups of ...<br>There are ... altogether.<br>                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                           |                                                                                                                                                                                          |
| <b>Year 1</b>                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Count in multiples of twos, fives and tens.</li> <li>Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher.</li> </ul>                                                                                                                                                                                                                                                                        |                                                                                                                                           |                                                                                                                                                                                          |
| <b>Progression of skills</b>                                                                                                                                                                            | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                           |                                                                                                                                                                                          |
| <b>Count in 2s, 5s and 10s</b><br><br>Begin by counting objects that naturally come in 2s, 5s and 10s, for example pairs of socks or fingers.                                                           | There are ... equal groups of ...<br>There are ... altogether.<br>                                                                                                                                                                                                                                                                                                                                                                         | Continue to colour in ...s<br>What do you notice?<br> | Complete the number track/number line by counting in ...s.<br>                                      |
| <b>Add equal groups (repeated addition)</b><br><br>Children should be able to write a repeated addition to represent equal groups and to draw pictures or use objects to represent a repeated addition. | There are ... groups of ...<br>There are ... altogether.<br> $10 + 10 + 10 = 30$<br>$5 + 5 + 5 + 5 = 20$                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                           | What is the same? What is different?<br><br>$2 + 2 + 2 =$<br>$5 + 5 + 5 =$<br>$10 + 10 + 10 =$<br><br>Use objects or a drawing to represent the equal groups and find how many in total. |

| Progression of skills                                                                                                                           | Key representations                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Make arrays</b><br><br>Children use their knowledge of adding equal groups to arrange objects in columns and rows.                           | There are ... rows of ... There are ... altogether.<br>There are ... columns of ... There are ... altogether.<br><br>                                                                                                                                                                                    |                                                                                                                                                                     |
| <b>Make doubles</b><br><br>Children understand that doubles are two equal groups. Children may begin to explore doubles beyond 20 using base 10 | Double ... is ...<br>... + ... = ...<br><br>                                                                                                                                                                                                                                                             |                                                                                                                                                                     |
| <b>Year 2</b>                                                                                                                                   | <ul style="list-style-type: none"> <li>Recall and use multiplication facts for the 2, 5 and 10 multiplication tables.</li> <li>Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs.</li> <li>Show that multiplication of two numbers can be done in any order (commutative).</li> </ul> |                                                                                                                                                                     |
| Progression of skills                                                                                                                           | Key representations                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                     |
| <b>Link repeated addition and multiplication</b><br><br>Encourage children to make the link between repeated addition and multiplication.       | There are ... equal groups with ... in each group.<br>There are ... altogether.<br><br> $3 + 3 = 6$ $2 \times 3 = 6$ $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$                                                                                                                                            |                                                                                                                                                                     |
| <b>Use arrays</b><br><br>Encourage children to see that multiplication is commutative.                                                          | There are ... rows with ... in each row.<br>There are ... columns with ... in each column.<br><br> 3 lots of 5 = 15<br>$5 + 5 + 5 = 15$<br>5 lots of 3 = 15<br>$3 + 3 + 3 + 3 + 3 = 15$                                                                                                                 | I can see ... × ... and ... × ...<br><br>$3 \times 5 = 15$<br>$5 \times 3 = 15$<br>$3 \times 5 = 5 \times 3$                                                        |
| <b>Double</b><br><br>Encourage children to make links with related facts.                                                                       | Double ... is ...<br><br> Double 4 = 4 + 4<br>Double 4 is 8                                                                                                                                                                                                                                             | Double ... is ... so double ... is ...<br><br> Double 4 is 8<br>Double 40 is 80 |

| Progression of skills                                                                                                                          | Key representations                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| <b>The 2 times-table</b><br><br>Encourage daily counting in multiples both forwards and back. Notice that all multiples of 2 are even numbers. | <p>... lots of 2 =<br/>... <math>\times 2 =</math></p>  <p>2 2 2 2</p>             | <p>... times 2 is equal to ...</p> <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> <p><math>1 \times 2 = 2</math>    <math>2 = 1 \times 2</math><br/><math>2 \times 2 = 4</math>    <math>4 = 2 \times 2</math><br/><math>3 \times 2 = 6</math>    <math>6 = 3 \times 2</math></p>                                                                                                                                      | 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 |    |    |    |    |    |    |    |    |    |    |
| 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 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>The 10 times-table</b><br><br>Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.              | <p>... lots of 10 =<br/>... <math>\times 10 =</math></p>  <p>10 10 10 10 10 10</p> | <p>... times 10 is equal to ...</p> <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr></table> <p><math>1 \times 10 = 10</math>    <math>10 = 1 \times 10</math><br/><math>2 \times 10 = 20</math>    <math>20 = 2 \times 10</math><br/><math>3 \times 10 = 30</math>    <math>30 = 3 \times 10</math></p>  | 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 |
| 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 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Progression of skills                                                                                                                          | Key representations                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>The 5 times-table</b><br><br>Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.               | <p>... lots of 5 =<br/>... <math>\times 5 =</math></p>  <p>5 5 5 5 5</p>         | <p>... times 5 is equal to ...</p> <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr><tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr></table> <p><math>1 \times 5 = 5</math>    <math>5 = 1 \times 5</math><br/><math>2 \times 5 = 10</math>    <math>10 = 2 \times 5</math><br/><math>3 \times 5 = 15</math>    <math>15 = 3 \times 5</math></p>         | 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 |
| 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 |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>Missing numbers</b><br><br>Make links to known facts.                                                                                       | <p>... is equal to ... groups of ...</p> <p>18 socks, how many pairs?</p>        | <p>... times ... is equal to ...</p> <p><math>\square \times 2 = 18</math></p> <p><math>18 = 2 \times \square</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |    |    |    |    |    |   |   |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

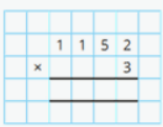
| <b>Year 3</b>                                                                                                                                                                               | <ul style="list-style-type: none"><li>Recall and use multiplication facts for the 3, 4 and 8 multiplication tables.</li><li>Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods.</li><li>Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.</li></ul>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|----|----|----|----|----|---|----|----|------|------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| <b>Progression of skills</b>                                                                                                                                                                | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>The 3 times-table</b><br><br>Encourage daily counting in multiples both forwards and back.                                                                                               | <p>... groups of 3 =<br/>... <math>\times 3 =</math><br/>3, ... times =<br/><math>3 \times \dots =</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>... times 3 is equal to ...</p> <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> <p><math>4 \times 3 = 12</math>   <math>12 = 4 \times 3</math></p>    | 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 |
| 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 |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>The 4 times-table</b><br><br>Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2 and 4 times-tables.                          | <p>... groups of 4 =<br/>... <math>\times 4 =</math><br/>4, ... times =<br/><math>4 \times \dots =</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>... times 4 is equal to ...</p> <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> <p><math>3 \times 4 = 12</math>   <math>12 = 3 \times 4</math></p>    | 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 |
| 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 |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>Progression of skills</b>                                                                                                                                                                | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>The 8 times-table</b><br><br>Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2, 4 and 8 times-tables.                       | <p>... lots of 8 =<br/><math>\times 8 =</math><br/>8, ... times =<br/><math>8 \times \dots =</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p>... times 8 is equal to ...</p> <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table> <p><math>3 \times 8 = 24</math>   <math>24 = 3 \times 8</math></p>  | 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 |
| 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 |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>Related facts</b><br><br>Use knowledge of multiplying by 10 to scale times-table facts.                                                                                                  | <p>... <math>\times \dots</math> ones is equal to ... ones<br/>so ... <math>\times \dots</math> tens is equal to ... tens.</p>  <p><math>3 \times 4 = 12</math><br/><math>3 \times 40 = 120</math></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| <b>Multiply a 2-digit number by a 1-digit number - no exchange</b><br><br>Children apply their understanding of partitioning to represent and solve calculations using the expanded method. | <p>... tens multiplied by ... is equal to ... tens.<br/>...ones multiplied by ... is equal to ... ones.</p> <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>20</td><td>1</td></tr><tr><td>20</td><td>1</td></tr><tr><td>20</td><td>1</td></tr><tr><td>20</td><td>1</td></tr></tbody></table> <p><math>30 \times 2 = 60</math><br/><math>2 \times 2 = 4</math><br/><math>32 \times 2 = 64</math></p>  <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>10</td><td>1</td></tr><tr><td>10</td><td>1</td></tr><tr><td>10</td><td>1</td></tr><tr><td>10</td><td>1</td></tr></tbody></table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Tens | Ones | 20 | 1  | 20 | 1  | 20 | 1 | 20 | 1  | Tens | Ones | 10 | 1  | 10 | 1  | 10 | 1  | 10 | 1  |    |    |    |    |    |    |    |    |    |    |
| Tens                                                                                                                                                                                        | Ones                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 20                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 20                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 20                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 20                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| Tens                                                                                                                                                                                        | Ones                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 10                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |      |    |    |    |    |    |   |    |    |      |      |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

| Progression of skills                                                                                                                                                                                | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
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| <p><b>Multiply a 2-digit number by a 1-digit number - with exchange</b></p> <p>Children apply their understanding of partitioning to represent and solve calculations using the expanded method.</p> | <p>... tens multiplied by ... is equal to ... tens.<br/>... ones multiplied by ... is equal to ... ones.</p> <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> <p><math>20 \times 4 = 80</math><br/><math>4 \times 4 = 16</math><br/><math>24 \times 4 = 96</math></p> <div><div><math>45 \times 3</math></div><div><math>40 \times 3</math></div><div><math>5 \times 3</math></div></div> <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> | Tens    | Ones |         |      |  |  |        |  |  |        |  |  | Tens | Ones |  |  |  |  |  |  |  |  |  |  |
| Tens                                                                                                                                                                                                 | Ones                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| Tens                                                                                                                                                                                                 | Ones                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| <p><b>Scaling</b></p> <p>Children focus on multiplication as scaling ( ... times the size) as opposed to repeated addition.</p>                                                                      | <p>There are .... times as many ... as ...</p> <div><div></div><div></div><div></div><div> </div></div> <p>There are 3 times as many triangles as circles.</p> <p>... is ... times the size of ...<br/>... is ... times the length/height of ...</p> <div><div></div><div></div></div> <div></div> <p>Miss Smith is twice the height of Jo.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| Progression of skills                                                                                                                                                                                | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| <p><b>Correspondence problems</b><br/>(How many ways?)</p> <p>Encourage children to work systematically to find all the different possible combinations.</p>                                         | <p>For every ... , there are ... possible ...<br/>There are ... <math>\times</math> ... possibilities altogether.</p> <table border="1"><thead><tr><th></th><th>hats</th><th>scarves</th></tr></thead><tbody><tr><td>blue</td><td></td><td></td></tr><tr><td>orange</td><td></td><td></td></tr><tr><td>purple</td><td></td><td></td></tr></tbody></table> <div></div> <p>For every hat, there are two possible scarves.<br/><math>3 \times 2 = 6</math><br/>There are 6 possibilities altogether.</p>                                                                                                                                                                                                                                                                                                          |         | hats | scarves | blue |  |  | orange |  |  | purple |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
|                                                                                                                                                                                                      | hats                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | scarves |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| blue                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| orange                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |
| purple                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |      |         |      |  |  |        |  |  |        |  |  |      |      |  |  |  |  |  |  |  |  |  |  |

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| <b>Year 4</b>                                                                                                                                                                                | <ul style="list-style-type: none"> <li>Recall multiplication facts for multiplication tables up to <math>12 \times 12</math></li> <li>Use place value, known and derived facts to multiply mentally, including: multiplying by 0 and 1; multiplying together three numbers.</li> <li>Recognise and use factor pairs and commutativity in mental calculations.</li> <li>Multiply two-digit and three-digit numbers by a one-digit number using formal written layout.</li> <li>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 <math>n</math> objects are connected to <math>m</math> objects.</li> </ul> |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Progression of skills</b>                                                                                                                                                                 | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Times-table facts to <math>12 \times 12</math></b><br><br>Encourage daily counting in multiples both forwards and back. Encourage children to notice links between related times-tables.  | <p>... groups of ... =<br/> ... times ... is equal to ...<br/> ... <math>\times</math> ... =</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Multiply by 1 and 0</b>                                                                                                                                                                   | <p>Any number multiplied by 1 is equal to ...<br/> Any number multiplied by 0 is equal to ...</p>  <p>... <math>\times</math> ... = ...</p> <table border="0"> <tr> <td><math>1 \times 1 = 1</math></td> <td><math>1 \times 0 = 0</math></td> </tr> <tr> <td><math>2 \times 1 = 2</math></td> <td><math>2 \times 0 = 0</math></td> </tr> <tr> <td><math>3 \times 1 = 3</math></td> <td><math>3 \times 0 = 0</math></td> </tr> <tr> <td><math>4 \times 1 = 4</math></td> <td><math>4 \times 0 = 0</math></td> </tr> </table>                                                                                                                                                   | $1 \times 1 = 1$ | $1 \times 0 = 0$ | $2 \times 1 = 2$ | $2 \times 0 = 0$ | $3 \times 1 = 3$ | $3 \times 0 = 0$ | $4 \times 1 = 4$ | $4 \times 0 = 0$ |
| $1 \times 1 = 1$                                                                                                                                                                             | $1 \times 0 = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                  |                  |                  |                  |                  |                  |                  |
| $2 \times 1 = 2$                                                                                                                                                                             | $2 \times 0 = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                  |                  |                  |                  |                  |                  |                  |
| $3 \times 1 = 3$                                                                                                                                                                             | $3 \times 0 = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                  |                  |                  |                  |                  |                  |                  |
| $4 \times 1 = 4$                                                                                                                                                                             | $4 \times 0 = 0$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Progression of skills</b>                                                                                                                                                                 | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Multiply 3 numbers</b><br><br>Children use their understanding of commutativity to multiply more efficiently.                                                                             | <p>To work out ... <math>\times</math> ... <math>\times</math> ..., I can first calculate ... <math>\times</math> ... and then multiply the answer by ...</p>  <p> <math>4 \times 2 \times 3 = 8 \times 3 = 24</math><br/> <math>2 \times 3 \times 4 = 6 \times 4 = 24</math><br/> <math>3 \times 4 \times 2 = 12 \times 2 = 24</math> </p>                                                                                                                                                                                                                                                                                                                                 |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Factor pairs</b><br><br>Children explore equivalent calculations using different factors pairs.                                                                                           | <p><math>12 = \dots \times \dots</math>, so ... <math>\times</math> 12 = ... <math>\times</math> ... <math>\times</math> ...</p>  <p> <math>8 \times 6 = 8 \times 3 \times 2</math><br/> <math>8 \times 6 = 24 \times 2</math><br/> <math>6 \times 8 = 6 \times 4 \times 2</math><br/> <math>6 \times 8 = 24 \times 2</math> </p>                                                                                                                                                                                                                                                                                                                                          |                  |                  |                  |                  |                  |                  |                  |                  |
| <b>Multiply by 10 and 100</b><br><br>Some children may over-generalise that multiplying by 10 or 100 always results in adding zeros. This will cause issues later when multiplying decimals. | <div> <p>When I multiply by 10, the digits move ... place value column to the left.<br/> ... is 10 times the size of ...</p>  <p><math>35 \times 10 = 350</math></p> </div> <div> <p>When I multiply by 100, the digits move ... place value columns to the left.<br/> ... is 100 times the size of ...</p>  <p><math>14 \times 100 = 1,400</math></p> </div>                                                                                                                                                                                                                           |                  |                  |                  |                  |                  |                  |                  |                  |

| Progression of skills                                                                              | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related facts</b><br><br>Use knowledge of multiplying by 10 and 100 to scale times-table facts. | <p>... × ... ones is equal to ... ones<br/>so ... × ... tens is equal to ... tens<br/>and ... × ... hundreds is equal to ... hundreds.</p> <div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div></div> <div><div>3 × 7 = 21</div><div>3 × 70 = 210</div><div>3 × 700 = 2,100</div><div>7 × 3 = 21</div><div>7 × 30 = 210</div><div>7 × 300 = 2,100</div></div> |
| <b>Mental strategies</b><br><br>Partition 2 or 3-digit numbers to multiply using informal methods. | <p>... tens multiplied by ... is equal to ... tens.<br/>...ones multiplied by ... is equal to ... ones.</p> <div><div><div>Tens</div><div>Ones</div></div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div></div> <div><div>26</div><div>20</div><div>6</div><div>× 3</div><div>60</div><div>18</div></div> <div><div>10 × 8 = 80</div><div>10 × 8 = 80</div><div>6 × 8 = 48</div><div>0</div><div>80</div><div>160</div><div></div></div> <div><div>26 × 8 = 80 + 80 + 48 = 208</div></div>                                                                                       |

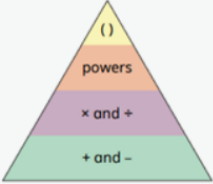
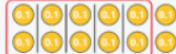
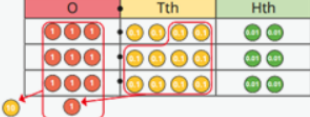
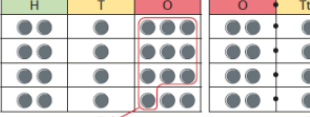
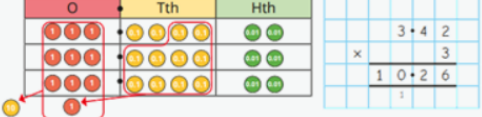
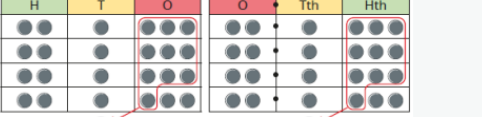
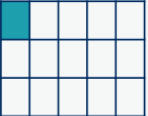
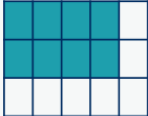
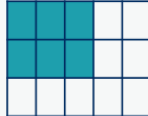
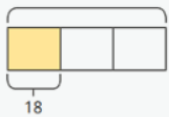
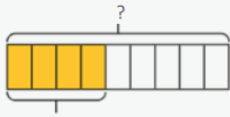
| Progression of skills                                                                                                                                             | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |          |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------|---------|------|--------|------|-----|------|----------|------|-----|------|-----------|------|-----|------|---------|------|-----|------|------|------|-----|------|
| <b>Multiply a 2 or 3-digit number by a 1-digit number</b><br><br>The short multiplication method is introduced for the first time, initially in an expanded form. | <p>To multiply a 2-digit number by ... , I multiply the ones by ... and the tens by ...<br/>To multiply a 3-digit number by ... , I multiply the ones by ... , the tens by ... and the hundreds by ...</p> <div><div><div>T</div><div>O</div></div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div><div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div></div> <div><div>H</div><div>T</div><div>O</div><div>3</div><div>4</div><div>×</div><div>5</div><div>2</div><div>0</div><div>1</div><div>5</div><div>0</div><div>1</div><div>7</div><div>0</div></div> <div><div>(4 × 5)</div><div>(30 × 5)</div></div> <div><div>H</div><div>T</div><div>O</div><div>3</div><div>4</div><div>×</div><div>5</div><div>1</div><div>7</div><div>0</div><div>1</div><div>2</div><div>0</div></div> <div><div>H</div><div>T</div><div>O</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div> <div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div><div>100100100</div></div> <div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div></div> |         |          |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| <b>Scaling</b><br><br>Children focus on multiplication as scaling ( ... times the size).                                                                          | <p>... is ... times the size of ...</p> <div><div><div>7</div><div>7</div><div>7</div><div>7</div><div>7</div><div>7</div></div><div>A computer mouse costs £7<br/>A keyboard costs 6 times as much.</div></div> <div><div><div>6</div><div>6</div><div>6</div><div>6</div><div>6</div><div>6</div></div><div>A red ribbon is 6 cm.<br/>A yellow ribbon is 7 times as long.</div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |         |          |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| <b>Correspondence problems</b><br><br>Encourage children to use tables to show all the different possible combinations.                                           | <p>For every ... , there are ... possibilities.<br/>There are ... × ... possibilities altogether.</p> <p>A pizza company offers a choice of 5 toppings and 3 bases.</p> <div><div>5 × 3 = 15</div><table><tr><th></th><th>Deep pan</th><th>Italian</th><th>Thin</th></tr><tr><td>Cheese</td><td>C DP</td><td>C I</td><td>C Th</td></tr><tr><td>Mushroom</td><td>M DP</td><td>M I</td><td>M Th</td></tr><tr><td>Vegetable</td><td>V DP</td><td>V I</td><td>V Th</td></tr><tr><td>Chicken</td><td>C DP</td><td>C I</td><td>C Th</td></tr><tr><td>Tuna</td><td>T DP</td><td>T I</td><td>T Th</td></tr></table></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |         | Deep pan | Italian | Thin | Cheese | C DP | C I | C Th | Mushroom | M DP | M I | M Th | Vegetable | V DP | V I | V Th | Chicken | C DP | C I | C Th | Tuna | T DP | T I | T Th |
|                                                                                                                                                                   | Deep pan                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Italian | Thin     |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| Cheese                                                                                                                                                            | C DP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | C I     | C Th     |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| Mushroom                                                                                                                                                          | M DP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | M I     | M Th     |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| Vegetable                                                                                                                                                         | V DP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | V I     | V Th     |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| Chicken                                                                                                                                                           | C DP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | C I     | C Th     |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |
| Tuna                                                                                                                                                              | T DP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | T I     | T Th     |         |      |        |      |     |      |          |      |     |      |           |      |     |      |         |      |     |      |      |      |     |      |

| <b>Year 5</b>                                                                                                                                                                  | <ul style="list-style-type: none"><li>Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers</li><li>Recognise and use square numbers and cube numbers, and the notation for squared (<sup>2</sup>) and cubed (<sup>3</sup>)</li><li>Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers.</li><li>Multiply numbers mentally drawing upon known facts.</li><li>Multiply whole numbers and those involving decimals by 10, 100 and 1000</li><li>Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|-------|-----|------|-----|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|----|----|------|-----|----|----|------|-----|----|----|----|----|----|----|----|----|----|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Progression of skills</b>                                                                                                                                                   | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| <b>Multiples and factors</b><br><br>Encourage children to notice patterns and make links with known facts.                                                                     | <p>... is a multiple of ... because<br/>... × ... = ...</p>  <table border="1"><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr><tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr></table>                                                                                                                                                   | 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 | <p>... is a factor of ... because<br/>... × ... = ...</p>  1 × 8<br> 2 × 4<br><br>1, 2, 4 and 8 are factors of 8 | <p>The common factors of ... and ... are ...</p> <p>Factors of 20      Factors of 12</p>  |
| 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  |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| <b>Square and cube numbers</b>                                                                                                                                                 | <p>... squared means ... × ...</p>  1 × 1<br>1 <sup>2</sup> = 1<br> 2 × 2<br>2 <sup>2</sup> = 4<br> 3 × 3<br>3 <sup>2</sup> = 9<br> 4 × 4<br>4 <sup>2</sup> = 16                                                                                                                                                                                                               | <p>... cubed means ... × ... × ...</p>  1 × 1 × 1<br>1 <sup>3</sup> = 1<br> 2 × 2 × 2<br>2 <sup>3</sup> = 8<br> 3 × 3 × 3<br>3 <sup>3</sup> = 27 |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| <b>Progression of skills</b>                                                                                                                                                   | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                         |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| <b>Multiply numbers up to 4 digits by a 1-digit number</b><br><br>This builds on the short multiplication method introduced in Y4                                              | <p>To multiply a 4-digit number by ..., I multiply the ones by ..., the tens by ..., the hundreds by ... and the thousands by ...</p> <table border="1"><thead><tr><th>Th</th><th>H</th><th>T</th><th>O</th></tr></thead><tbody><tr><td>1000</td><td>100</td><td>10</td><td>1</td></tr><tr><td>1000</td><td>100</td><td>10</td><td>1</td></tr><tr><td>1000</td><td>100</td><td>10</td><td>1</td></tr><tr><td>1000</td><td>100</td><td>10</td><td>1</td></tr></tbody></table>                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                         |    | Th | H  | T     | O   | 1000 | 100 | 10 | 1                                                                                                                                                                                                                                                                                                                                                                        | 1000 | 100 | 10 | 1  | 1000 | 100 | 10 | 1  | 1000 | 100 | 10 | 1  |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| Th                                                                                                                                                                             | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | T                                                                                                                                                                                                                                                                                                                                                                                                       | O  |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 1000                                                                                                                                                                           | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10                                                                                                                                                                                                                                                                                                                                                                                                      | 1  |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 1000                                                                                                                                                                           | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10                                                                                                                                                                                                                                                                                                                                                                                                      | 1  |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 1000                                                                                                                                                                           | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10                                                                                                                                                                                                                                                                                                                                                                                                      | 1  |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 1000                                                                                                                                                                           | 100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10                                                                                                                                                                                                                                                                                                                                                                                                      | 1  |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| <b>Multiply numbers up to 4 digits by a 2-digit number</b><br><br>Numbers are first partitioned using an area model then long multiplication is introduced for the first time. | <p>I can partition ... into ... and ...</p> <table border="1"><tr><td>×</td><td>40</td><td>4</td></tr><tr><td>30</td><td>1,200</td><td>120</td></tr><tr><td>2</td><td>80</td><td>8</td></tr></table> <p>32 × 44 = 1,200 + 80 + 120 + 8<br/>32 × 44 = 1,408</p>                                                                                                                                                                                                                                                                                                                                                                                                                       | ×                                                                                                                                                                                                                                                                                                                                                                                                       | 40 | 4  | 30 | 1,200 | 120 | 2    | 80  | 8  | <p>First, I multiply by the ... Then I multiply by the ...</p> <table border="1"><tr><td>×</td><td>10</td><td>3</td></tr><tr><td>30</td><td>300</td><td>90</td></tr><tr><td>2</td><td>20</td><td>6</td></tr></table> <p>300 + 90 + 20 + 6 = 416</p>  |      | ×   | 10 | 3  | 30   | 300 | 90 | 2  | 20   | 6   |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| ×                                                                                                                                                                              | 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 4                                                                                                                                                                                                                                                                                                                                                                                                       |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 30                                                                                                                                                                             | 1,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 120                                                                                                                                                                                                                                                                                                                                                                                                     |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 2                                                                                                                                                                              | 80                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 8                                                                                                                                                                                                                                                                                                                                                                                                       |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| ×                                                                                                                                                                              | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 3                                                                                                                                                                                                                                                                                                                                                                                                       |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 30                                                                                                                                                                             | 300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 90                                                                                                                                                                                                                                                                                                                                                                                                      |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |
| 2                                                                                                                                                                              | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 6                                                                                                                                                                                                                                                                                                                                                                                                       |    |    |    |       |     |      |     |    |                                                                                                                                                                                                                                                                                                                                                                          |      |     |    |    |      |     |    |    |      |     |    |    |    |    |    |    |    |    |    |    |                                                                                                                                                                                                                                                                                    |                                                                                                                                                                              |

| Progression of skills                                                                                                                                                                                          | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |     |     |     |    |   |   |  |  |  |  |  |  |  |    |    |    |  |  |  |    |   |   |   |     |     |  |  |  |    |    |    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----|-----|-----|----|---|---|--|--|--|--|--|--|--|----|----|----|--|--|--|----|---|---|---|-----|-----|--|--|--|----|----|----|
| <p><b>Multiply by 10, 100 and 1,000</b></p> <p>Some children may over-generalise that multiplying by a power of 10 always results in adding zeros. This will cause issues later when multiplying decimals.</p> | <p>To multiply by 10/100/1,000, I move all the digits ... places to the left.<br/>... is 10/100/1,000 times the size of ...</p> <table><tr><td>M</td><td>HTh</td><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td><td>●●</td><td>●●</td><td>●●</td><td></td><td></td><td></td></tr></table> <p><math>234 \times 10 = 2,340</math><br/><math>234 \times 100 = 23,400</math><br/><math>234 \times 1,000 = 234,000</math></p> <table><tr><td>Th</td><td>H</td><td>T</td><td>O</td><td>Tth</td><td>Hth</td></tr><tr><td></td><td></td><td></td><td>●●</td><td>●●</td><td>●●</td></tr></table> <p><math>2.34 \times 10 = 23.4</math><br/><math>2.34 \times 100 = 234</math><br/><math>2.34 \times 1,000 = 2,340</math></p> | M   | HTh | TTh | Th  | H  | T | O |  |  |  |  |  |  |  | ●● | ●● | ●● |  |  |  | Th | H | T | O | Tth | Hth |  |  |  | ●● | ●● | ●● |
| M                                                                                                                                                                                                              | HTh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | TTh | Th  | H   | T   | O  |   |   |  |  |  |  |  |  |  |    |    |    |  |  |  |    |   |   |   |     |     |  |  |  |    |    |    |
|                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |     | ●●  | ●●  | ●● |   |   |  |  |  |  |  |  |  |    |    |    |  |  |  |    |   |   |   |     |     |  |  |  |    |    |    |
| Th                                                                                                                                                                                                             | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | T   | O   | Tth | Hth |    |   |   |  |  |  |  |  |  |  |    |    |    |  |  |  |    |   |   |   |     |     |  |  |  |    |    |    |
|                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     | ●●  | ●●  | ●●  |    |   |   |  |  |  |  |  |  |  |    |    |    |  |  |  |    |   |   |   |     |     |  |  |  |    |    |    |
| <p><b>Mental strategies</b></p> <p>Children continue to use efficient mental strategies such as partitioning and knowledge of factor pairs and related facts to multiply.</p>                                  | <p>The most efficient strategy to calculate ... <math>\times</math> ... is ...<br/>To calculate ... <math>\times</math> 12, I can do ... <math>\times</math> ... <math>\times</math> ...</p> <p>For example: <math>121 \times 12</math><br/>I could calculate <math>100 \times 12</math> plus <math>20 \times 12</math> plus <math>1 \times 12</math><br/>I could calculate <math>121 \times 10</math> plus <math>121 \times 2</math><br/>I could calculate <math>121 \times 6 \times 2</math><br/>I could calculate <math>121 \times 4 \times 3</math></p>                                                                                                                                                                                                                                       |     |     |     |     |    |   |   |  |  |  |  |  |  |  |    |    |    |  |  |  |    |   |   |   |     |     |  |  |  |    |    |    |

| Progression of skills                                                                                                                                                                           | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                         |                                                           |                                     |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----------------------------------------------------------|-------------------------------------|---------------|---------------|--|--|---------------|---------------|---------------|--|--|--|--|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| <p><b>Multiply fractions by a whole number</b></p> <p>Make links with repeated addition.<br/>E.g. <math>\frac{1}{5} \times 4 = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}</math></p> | <p>To multiply a fraction by an integer, I multiply the numerator by the integer and the denominator remains the same.</p> <table><tr><td><math>\frac{1}{7}</math></td><td><math>\frac{1}{7}</math></td><td><math>\frac{1}{7}</math></td><td><math>\frac{1}{7}</math></td><td><math>\frac{1}{7}</math></td><td></td><td></td></tr></table> <p><math>\frac{1}{7} \times 5 = \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} + \frac{1}{7} = \frac{5}{7}</math></p> <table><tr><td><math>\frac{2}{7}</math></td><td><math>\frac{2}{7}</math></td><td><math>\frac{2}{7}</math></td><td></td><td></td><td></td><td></td></tr></table> <p><math>\frac{2}{7} \times 3 = \frac{2}{7} + \frac{2}{7} + \frac{2}{7} = \frac{6}{7}</math></p> <table><tr><td><math>\frac{1}{5}</math></td><td><math>\frac{1}{5}</math></td><td><math>\frac{1}{5}</math></td><td><math>\frac{1}{5}</math></td><td><math>\frac{1}{5}</math></td><td><math>\frac{1}{5}</math></td></tr></table> <p><math>\frac{1}{5} \times 6 = \frac{6}{5} = 1\frac{1}{5}</math></p> <table><tr><td><math>\frac{2}{5}</math></td><td><math>\frac{2}{5}</math></td><td><math>\frac{2}{5}</math></td></tr></table> <p><math>\frac{2}{5} \times 3 = \frac{6}{5} = 1\frac{1}{5}</math></p> | $\frac{1}{7}$           | $\frac{1}{7}$                                             | $\frac{1}{7}$                       | $\frac{1}{7}$ | $\frac{1}{7}$ |  |  | $\frac{2}{7}$ | $\frac{2}{7}$ | $\frac{2}{7}$ |  |  |  |  | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{1}{5}$ | $\frac{2}{5}$ | $\frac{2}{5}$ | $\frac{2}{5}$ |
| $\frac{1}{7}$                                                                                                                                                                                   | $\frac{1}{7}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | $\frac{1}{7}$           | $\frac{1}{7}$                                             | $\frac{1}{7}$                       |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| $\frac{2}{7}$                                                                                                                                                                                   | $\frac{2}{7}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | $\frac{2}{7}$           |                                                           |                                     |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| $\frac{1}{5}$                                                                                                                                                                                   | $\frac{1}{5}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | $\frac{1}{5}$           | $\frac{1}{5}$                                             | $\frac{1}{5}$                       | $\frac{1}{5}$ |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| $\frac{2}{5}$                                                                                                                                                                                   | $\frac{2}{5}$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | $\frac{2}{5}$           |                                                           |                                     |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| <p><b>Multiply mixed numbers by a whole number</b></p>                                                                                                                                          | <p>I can partition <math>\frac{2}{3}</math> into <math>\frac{1}{3}</math> and <math>\frac{1}{3}</math></p> <table><tr><td><math>2\frac{2}{3} \times 3</math></td></tr><tr><td><math>2 \times 3 = 6</math>     <math>\frac{2}{3} \times 3 = \frac{6}{3} = 2</math></td></tr><tr><td><math>2\frac{2}{3} \times 3 = 6 + 2 = 8</math></td></tr></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | $2\frac{2}{3} \times 3$ | $2 \times 3 = 6$ $\frac{2}{3} \times 3 = \frac{6}{3} = 2$ | $2\frac{2}{3} \times 3 = 6 + 2 = 8$ |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| $2\frac{2}{3} \times 3$                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                                                           |                                     |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| $2 \times 3 = 6$ $\frac{2}{3} \times 3 = \frac{6}{3} = 2$                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                                                           |                                     |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |
| $2\frac{2}{3} \times 3 = 6 + 2 = 8$                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                         |                                                           |                                     |               |               |  |  |               |               |               |  |  |  |  |               |               |               |               |               |               |               |               |               |

| Progression of skills                                                                                                                           | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |     |     |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|-----|-----|---------------------|---|---|---|----------|--|--|--|---|---|---|----|---|---|---|-----|-----|--------------------|--|---|---|---|---|---|---------------------|--|---|---|---|---|---|--|--|---|--|--|--|--|--|
| <b>Find the whole</b><br><br>Children multiply to find the whole from a given part.                                                             | <p>If <math>\frac{1}{5}</math> is ... , then the whole is ... <math>\times</math> ...</p> <p><math>\frac{1}{5}</math> of ___ = 6</p> <div><div><div>6</div><div>6</div><div>6</div><div>6</div><div>6</div></div><div>?</div></div> <p><math>5 \times 6 = 30</math></p> <p><math>\frac{1}{5}</math> of <b>30</b> = 6</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <p>If <math>\frac{4}{7}</math> is ... , then <math>\frac{1}{7}</math> is ... and the whole is ... <math>\times</math> ...</p> <p><math>\frac{4}{7}</math> of ___ = 24</p> <div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>?</div></div> <p><math>\frac{1}{7} = 24 \div 4 = 6</math></p> <p><math>7 \times 6 = 42</math></p> <p><math>\frac{4}{7}</math> of <b>42</b> = 24</p>                                                                                                                                                |    |     |     |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| <b>Year 6</b>                                                                                                                                   | <ul style="list-style-type: none"><li>Identify common factors and common multiples.</li><li>Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication.</li><li>Multiply numbers by 10, 100 and 1,000</li><li>Multiply one-digit numbers with up to two decimal places by whole numbers.</li><li>Use their knowledge of the order of operations to carry out calculations involving the 4 operations.</li><li>Multiply simple pairs of proper fractions, writing the answer in its simplest form.</li><li>Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts.</li><li>Solve problems involving the calculation of percentages.</li></ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |     |     |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| Progression of skills                                                                                                                           | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |     |     |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| <b>Multiply numbers up to 4 digits by a 2-digit number</b>                                                                                      | <p>To multiply by a 2-digit number, first multiply by the ones, then multiply by the tens and then find the total.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <div><table><tr><td></td><td></td><td>1</td><td>2</td><td>0</td><td>7</td><td></td></tr><tr><td><math>\times</math></td><td></td><td></td><td></td><td>3</td><td>6</td><td></td></tr><tr><td>+</td><td>7</td><td>2</td><td>4</td><td>2</td><td></td><td>(1,207 <math>\times</math> 6)</td></tr><tr><td></td><td>3</td><td>6</td><td>2</td><td>1</td><td>0</td><td>(1,207 <math>\times</math> 30)</td></tr><tr><td></td><td>4</td><td>3</td><td>4</td><td>5</td><td>2</td><td></td></tr><tr><td></td><td>1</td><td></td><td></td><td></td><td></td><td></td></tr></table></div> |    |     | 1   | 2                   | 0 | 7 |   | $\times$ |  |  |  | 3 | 6 |   | +  | 7 | 2 | 4 | 2   |     | (1,207 $\times$ 6) |  | 3 | 6 | 2 | 1 | 0 | (1,207 $\times$ 30) |  | 4 | 3 | 4 | 5 | 2 |  |  | 1 |  |  |  |  |  |
|                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2  | 0   | 7   |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| $\times$                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    | 3   | 6   |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| +                                                                                                                                               | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4  | 2   |     | (1,207 $\times$ 6)  |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
|                                                                                                                                                 | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 2  | 1   | 0   | (1,207 $\times$ 30) |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
|                                                                                                                                                 | 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 4  | 5   | 2   |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
|                                                                                                                                                 | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    |     |     |                     |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| <b>Multiply by 10, 100 and 1,000</b><br><br>Some children may over-generalise that multiplying by a power of 10 always results in adding zeros. | <p>To multiply by 10/100/1,000, I move all the digits ... places to the left.<br/>... is 10/100/1,000 times the size of ...</p> <div><table><tr><th>M</th><th>HTh</th><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td></tr></table><p><math>234 \times 10 = 2,340</math><br/><math>234 \times 100 = 23,400</math><br/><math>234 \times 1,000 = 234,000</math></p></div> <div><table><tr><th>Th</th><th>H</th><th>T</th><th>O</th><th>Tth</th><th>Hth</th><th>Thth</th></tr><tr><td></td><td></td><td></td><td></td><td>●</td><td>●</td><td>●</td></tr></table><p><math>0.234 \times 10 = 2.34</math><br/><math>0.234 \times 100 = 23.4</math><br/><math>0.234 \times 1,000 = 234</math></p></div>                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | M  | HTh | TTh | Th                  | H | T | O |          |  |  |  | ● | ● | ● | Th | H | T | O | Tth | Hth | Thth               |  |   |   |   | ● | ● | ●                   |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| M                                                                                                                                               | HTh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | TTh                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Th | H   | T   | O                   |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
|                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    | ●   | ●   | ●                   |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
| Th                                                                                                                                              | H                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | T                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | O  | Tth | Hth | Thth                |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |
|                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |    | ●   | ●   | ●                   |   |   |   |          |  |  |  |   |   |   |    |   |   |   |     |     |                    |  |   |   |   |   |   |                     |  |   |   |   |   |   |  |  |   |  |  |  |  |  |

| Progression of skills                                                                                                                                                                                                  | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Order of operations</b><br><br>Calculations in brackets should be done first. Multiplication and division should be performed before addition and subtraction.                                                      | ... has greater priority than ..., so the first part of the calculation I need to do is ...<br><br>  $(3 + 4) \times 2 = 14$  $3 + 4^2 = 19$  $3 + 4 \times 2 = 11$                             |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Multiply decimals by integers</b><br><br>This is the first time children multiply decimals by numbers other than 10, 100 or 1,000<br>Encourage them to make links with known facts and whole number multiplication. | I know that ... $\times$ ... = ..., so I also know that ... $\times$ ... = ...<br><br> $6 \times 2 = 12$  $6 \times 0.2 = 1.2$                                                                                                                                                                                                                                       | I need to exchange 10 ... for 1 ...<br><br>   $213 \times 4 = 852$  $2.13 \times 4 = 8.52$ |
| Progression of skills                                                                                                                                                                                                  | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Multiply fractions by fractions</b><br><br>Encourage children to give answers in their simplest form.                                                                                                               | When multiplying a pair of fractions, I need to multiply the numerator and multiply the denominator.<br><br> $\frac{1}{3} \times \frac{1}{5} = \frac{1}{15}$  $\frac{2}{3} \times \frac{4}{5} = \frac{8}{15}$  $\frac{2}{3} \times \frac{3}{5} = \frac{6}{15} = \frac{2}{5}$ |                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Find the whole</b><br><br>Children multiply to find the whole from a given part.                                                                                                                                    | If $\frac{1}{3}$ is ..., then the whole is ... $\times$ ...<br><br> $\frac{1}{3} \text{ of } \underline{\quad} = 18$ $18 \times 3 = 54$ $\frac{1}{3} \text{ of } 54 = 18$                                                                                                                                                                                                                                                                           | If $\frac{4}{9}$ is ..., then $\frac{1}{9}$ is ... and the whole is ... $\times$ ...<br><br> $\frac{4}{9} \text{ of } \underline{\quad} = 48$ $\frac{1}{9} = 48 \div 4 = 12$ $9 \times 12 = 108$ $\frac{4}{9} \text{ of } 108 = 48$                                                                                                            |

| Progression of skills                                                                                                                                                                                                                                                                                                                      | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----|-----|-----|-----|-----|-----|-----|--------|----------|-----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|----|---|---|---|---|---|---|---|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|--|--|--|----------|--|--|--|--|--|--|
| <b>Calculate percentages</b><br><br>Children first learn how to find 1%, 10%, 20%, 25% and 50% before using multiples of these amounts to find any percentage.                                                                                                                                                                             | There are ... lots of ... % in 100%<br>To find ... %, I need to divide by ...<br><table border="1"><tr><td colspan="4">100%</td></tr><tr><td colspan="2">50%</td><td colspan="2">50%</td></tr><tr><td>25%</td><td>25%</td><td>25%</td><td>25%</td></tr></table><br>50% of ... = ... $\div$ 2<br>25% of ... = ... $\div$ 4                                                                                                                                                                                                                                                                                                                                                                                                                             | 100% |     |     |     | 50% |     | 50% |     | 25%    | 25%      | 25% | 25% | ... % is made up of ... %, and ... %<br><table border="1"><tr><td colspan="10">100%</td></tr><tr><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td><td>10%</td></tr></table><br>To find 30%, I can find 10% and then multiply it by 3<br>To find 23%, I can use $10\% \times 2$ and $1\% \times 3$<br>To find 99%, I can find 1%, then subtract from 100% | 100% |   |    |   |   |   |   |   |   |   | 10%    | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 10% | 10% |    |  |  |  |          |  |  |  |  |  |  |
| 100%                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 50%                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 50%  |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 25%                                                                                                                                                                                                                                                                                                                                        | 25%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 25%  | 25% |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 100%                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 10%                                                                                                                                                                                                                                                                                                                                        | 10%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 10%  | 10% | 10% | 10% | 10% | 10% | 10% | 10% |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| <b>Calculations involving ratio</b><br><br>Encourage children to see the multiplicative relationship between ratios. They will need to multiply or divide each value by the same number to keep the ratio equivalent. Double number lines and ratio tables help children to see both horizontal and vertical multiplicative relationships. | For every ... , there are ...<br><br>For every 1 adult on a school trip, there are 6 children.<br><br>adults <table border="1"><tr><td></td></tr></table><br><br>children <table border="1"><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table><br><br><table border="1"><tr><th>Adults</th><th>Children</th></tr><tr><td>1</td><td>6</td></tr><tr><td>2</td><td>12</td></tr><tr><td>3</td><td>18</td></tr></table><br><br><table><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td colspan="7">Adults</td></tr><tr><td>0</td><td>6</td><td>12</td><td>18</td><td></td><td></td><td></td></tr><tr><td colspan="7">Children</td></tr></table><br><br>The ratio of adults to children is 1 : 6 |      |     |     |     |     |     |     |     | Adults | Children | 1   | 6   | 2                                                                                                                                                                                                                                                                                                                                                                                                                   | 12   | 3 | 18 | 0 | 1 | 2 | 3 | 4 | 5 | 6 | Adults |     |     |     |     |     |     | 0   | 6   | 12  | 18 |  |  |  | Children |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
|                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| Adults                                                                                                                                                                                                                                                                                                                                     | Children                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 1                                                                                                                                                                                                                                                                                                                                          | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 2                                                                                                                                                                                                                                                                                                                                          | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 3                                                                                                                                                                                                                                                                                                                                          | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 0                                                                                                                                                                                                                                                                                                                                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 2    | 3   | 4   | 5   | 6   |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| Adults                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| 0                                                                                                                                                                                                                                                                                                                                          | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 12   | 18  |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |
| Children                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |      |     |     |     |     |     |     |     |        |          |     |     |                                                                                                                                                                                                                                                                                                                                                                                                                     |      |   |    |   |   |   |   |   |   |   |        |     |     |     |     |     |     |     |     |     |    |  |  |  |          |  |  |  |  |  |  |

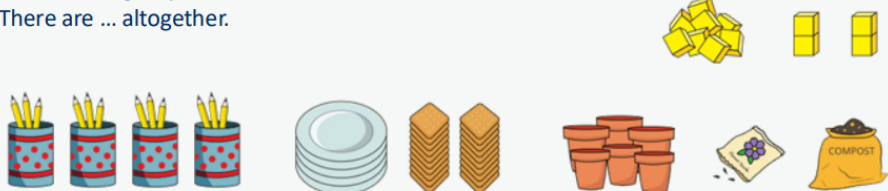
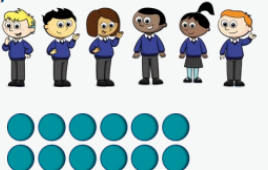
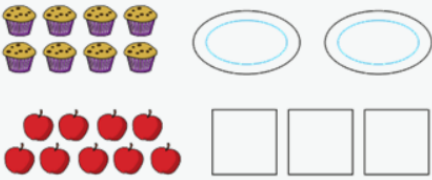
## Calculation Policy – Division

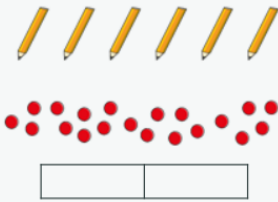
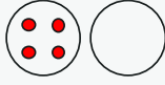
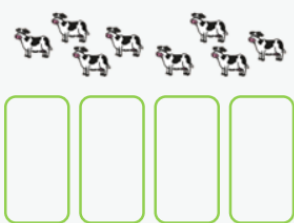
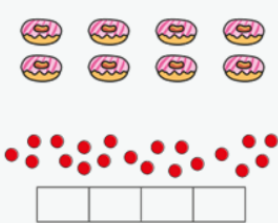
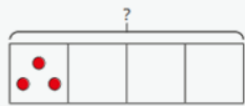
| Year group | Skill                                                                                                                                                                                |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nursery    | <ul style="list-style-type: none"><li>Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)</li></ul> |
| Reception  | <ul style="list-style-type: none"><li>Sharing</li><li>Grouping</li></ul>                                                                                                             |
| Year 1     | <ul style="list-style-type: none"><li>Make equal groups – grouping</li><li>Make equal groups – sharing</li><li>Find a half</li><li>Find a quarter</li></ul>                          |

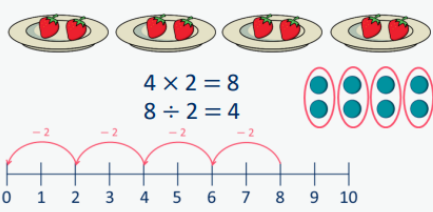
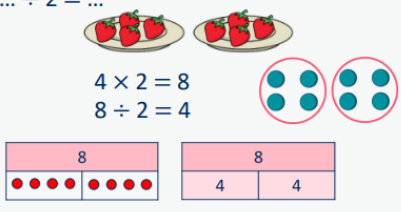
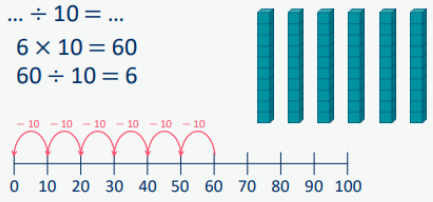
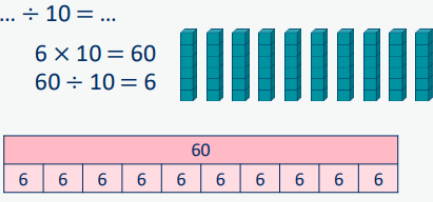
| Year group | Skill                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 2     | <ul style="list-style-type: none"><li>Divide by 2</li><li>Divide by 10</li><li>Divide by 5</li><li>Missing numbers</li><li>Unit fractions</li><li>Non-unit fractions</li></ul>                                                                                                                                                                              |
| Year 3     | <ul style="list-style-type: none"><li>Divide by 3</li><li>Divide by 4</li><li>Divide by 8</li><li>Related facts</li><li>Divide a 2-digit number by a 1-digit number - no exchange</li><li>Divide a 2-digit number by a 1-digit number - with remainders</li><li>Unit fractions of a set of objects</li><li>Non-unit fractions of a set of objects</li></ul> |

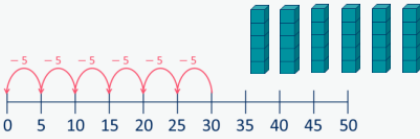
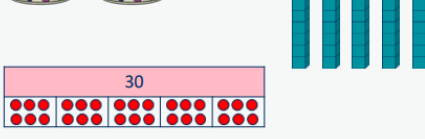
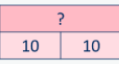
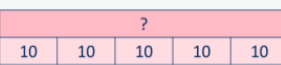
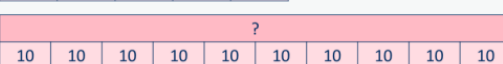
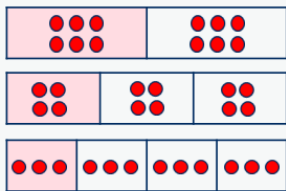
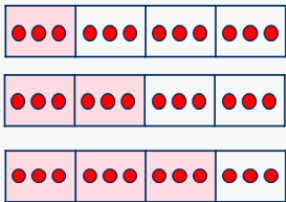
| Year group | Skill                                                                                                                                                                                                                                                           |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 4     | <ul style="list-style-type: none"> <li>• Division facts to <math>12 \times 12</math></li> <li>• Divide a number by 1 and itself</li> <li>• Related facts</li> <li>• Divide a 2 or 3-digit number by a 1-digit number</li> <li>• Divide by 10 and 100</li> </ul> |
| Year 5     | <ul style="list-style-type: none"> <li>• Mental strategies</li> <li>• Divide numbers up to 4 digits by a 1-digit number</li> <li>• Divide by 10, 100 and 1,000</li> <li>• Fraction of an amount</li> </ul>                                                      |

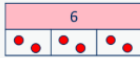
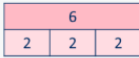
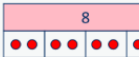
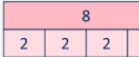
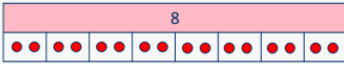
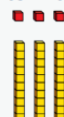
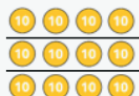
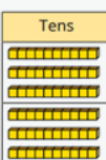
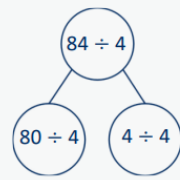
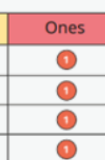
| Year group | Skill                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Year 6     | <ul style="list-style-type: none"> <li>• Short division</li> <li>• Mental strategies</li> <li>• Long division</li> <li>• Order of operations</li> <li>• Divide by 10, 100 and 1,000</li> <li>• Divide decimals by integers</li> <li>• Decimal and fraction equivalents</li> <li>• Divide a fraction by an integer</li> <li>• Fraction of an amount</li> <li>• Calculate percentages</li> <li>• Calculations involving ratio</li> </ul> |

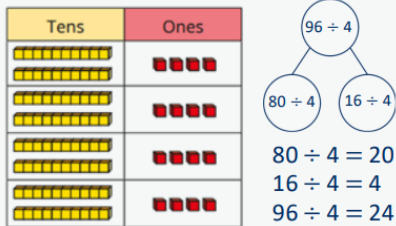
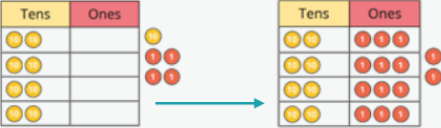
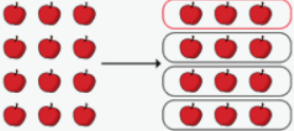
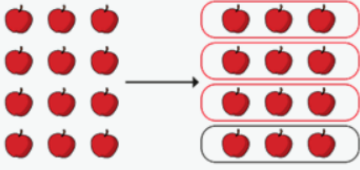
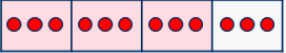
|                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                            |                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reception</b>                                                                                                                                                         | <ul style="list-style-type: none"> <li>Have a deep understanding of number to 10, including the composition of each number.</li> <li>Subitise (recognise quantities without counting) up to 5</li> <li>Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.</li> <li>Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.</li> </ul> |                                                                                                                                                                            |                                                                                                                                                                       |
| <b>Progression of skills</b>                                                                                                                                             | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                            |                                                                                                                                                                       |
| <b>Sharing</b><br><br>Provide practical activities such as sharing items during snack time. Encourage children to check whether items have been shared fairly (equally). | There are ... altogether.<br>They are shared equally between ... groups.<br><br>                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |                                                                                                                                                                       |
| <b>Grouping</b><br><br>Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount. | There are ... groups of ...<br>There are ... altogether.<br><br>                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |                                                                                                                                                                       |
| <b>Year 1</b>                                                                                                                                                            | <ul style="list-style-type: none"> <li>Solve simple one-step problems involving division, using concrete objects, pictorial representations and arrays with the support of the teacher.</li> <li>Recognise, find and name a half as one of two equal parts of a quantity.</li> <li>Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.</li> </ul>                                                                                                                                  |                                                                                                                                                                            |                                                                                                                                                                       |
| <b>Progression of skills</b>                                                                                                                                             | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                            |                                                                                                                                                                       |
| <b>Make equal groups - grouping</b><br><br>Encourage children to physically move objects into equal groups. They can also circle equal groups when using pictures.       | There are ... altogether.<br>How many groups of ... can you make?<br><br>                                                                                                                                                                                                                                                                                                                                                                  | Circle groups of 2<br>There are ... groups of 2<br><br>                                | Take ... cubes.<br>Make equal groups.<br><br><br><br>There are ... groups of ... |
| <b>Make equal groups – sharing</b><br><br>Encourage children to check that the objects have been shared fairly and each group is the same.                               | ... have been shared equally between...<br>There are ... on/in each ...<br><br>                                                                                                                                                                                                                                                                                                                                                            | Take ... cubes.<br>Share them between ...<br><br><br><br>12 shared between ... is ... |                                                                                                                                                                       |

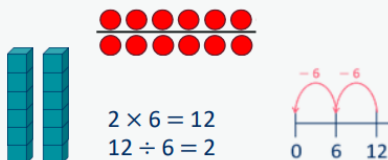
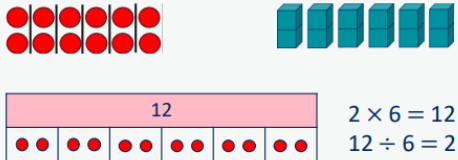
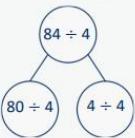
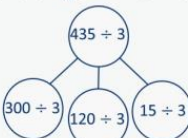
| Progression of skills                                                                                                                                                                                                | Key representations                                                                                                                                                                  |                                                                                                                                                  |                                                                                                                                                                     |
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| <b>Find a half</b><br><br>Start with practical opportunities to share a quantity into 2 groups.<br>Progress to circling half of the objects in a picture and then to finding the whole from a given half.            | To find half, I need to share into 2 equal groups.<br><br><br><br>There are ... in each group.      | Half of ... is ...<br><br><br><br>Half of ... is ...           | If ... is half, what is the whole?<br><br><br><br>4 is half of ...               |
| <b>Find a quarter</b><br><br>Start with practical opportunities to share a quantity into 4 groups.<br>Progress to using pictures or bar models to find a quarter and then to finding the whole from a given quarter. | To find a quarter, I need to share into 4 equal groups.<br><br><br><br>There are ... in each group. | A quarter of ... is ...<br><br><br><br>A quarter of ... is ... | If ... is one quarter, what is the whole?<br><br><br><br>3 is one quarter of ... |

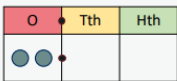
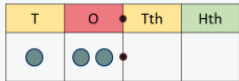
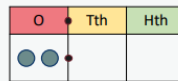
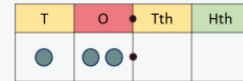
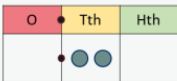
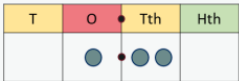
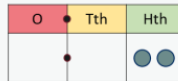
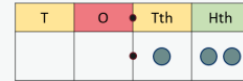
| <b>Year 2</b>                                                                                                                                                 | <ul style="list-style-type: none"> <li>Recall and use division facts for the 2, 5 and 10 multiplication tables.</li> <li>Calculate mathematical statements for division within the multiplication tables and write them using the division (<math>\div</math>) and equals (=) signs.</li> <li>Recognise, find, name and write fractions <math>\frac{1}{3}</math>, <math>\frac{1}{4}</math>, <math>\frac{2}{4}</math> and <math>\frac{3}{4}</math> of a quantity.</li> </ul> |                                                                                                                                                                                                                           |
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| Progression of skills                                                                                                                                         | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                           |
| <b>Divide by 2</b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts and halving. | There are ... equal groups of 2<br>$\dots \div 2 = \dots$<br><br><br><br>$4 \times 2 = 8$<br>$8 \div 2 = 4$                                                                                                                                                                                                                                                                              | ... shared equally between 2 is ...<br>Half of ... is ...<br>$\dots \div 2 = \dots$<br><br><br><br>$4 \times 2 = 8$<br>$8 \div 2 = 4$ |
| <b>Divide by 10</b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.            | There are ... equal groups of 10<br>$\dots \div 10 = \dots$<br>$6 \times 10 = 60$<br>$60 \div 10 = 6$<br><br><br><br>$6 \times 10 = 60$<br>$60 \div 10 = 6$                                                                                                                                                                                                                              | ... shared equally between 10 is ...<br>$\dots \div 10 = \dots$<br><br><br><br>$6 \times 10 = 60$<br>$60 \div 10 = 6$                 |

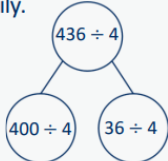
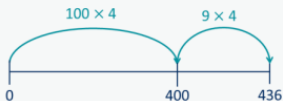
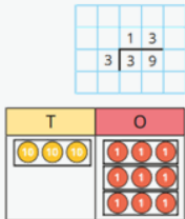
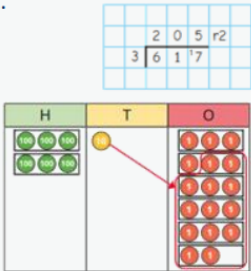
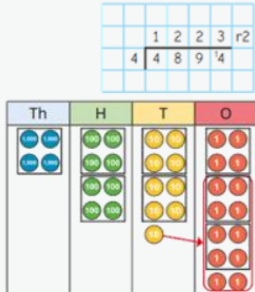
| Progression of skills                                                                                                                                                                         | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                            |
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| <b>Divide by 5</b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.                                             | <p>There are ... equal groups of 5</p> <p>... <math>\div 5 = \dots</math></p>  <p><math>6 \times 5 = 30</math><br/><math>30 \div 5 = 6</math></p>                                                                                                                            | <p>... shared equally between 5 is ...</p> <p>... <math>\div 5 = \dots</math></p>  <p><math>6 \times 5 = 30</math><br/><math>30 \div 5 = 6</math></p>  |
| <b>Missing numbers</b><br><br>Bar models are useful to show the link between multiplication and division.                                                                                     | <p>... divided by 2/5/10 is equal to ...</p> <div>  <math>\square \div 2 = 10</math> </div> <div>  <math>\square \div 5 = 10</math> </div> <div>  <math>\square \div 10 = 10</math> </div> |                                                                                                                                                                                                                                                                                                                            |
| Progression of skills                                                                                                                                                                         | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                            |
| <b>Unit fractions</b><br><br>In Y2 the focus is on finding $\frac{1}{2}$ , $\frac{1}{4}$ and $\frac{1}{3}$<br>Bar models are useful to show the link between division and finding a fraction. | <p>The objects have been shared fairly into ... groups.</p> <p><math>\frac{1}{\square}</math> of ... is ...</p>                                                                                                                                                                                                                                             | <p>There are ... equal parts.</p> <p>There is ... part circled.</p> <p><math>\frac{1}{\square}</math> is circled.</p>                                                                                                                  |
| <b>Non-unit fractions</b><br><br>In Y2 the focus is on finding $\frac{2}{4}$ and $\frac{3}{4}$<br><br>Prompt children to notice that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$             | <p>The objects have been shared fairly into ... groups.</p> <p><math>\frac{\square}{\square}</math> of ... is ...</p>                                                                                                                                                                                                                                       | <p>There are ... equal parts.</p> <p>There are ... parts circled.</p> <p><math>\frac{\square}{\square}</math> is circled.</p>                                                                                                          |

|                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
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| <b>Year 3</b>                                                                                                                                     | <ul style="list-style-type: none"> <li>Recall and use division facts for the 3, 4 and 8 multiplication tables.</li> <li>Write and calculate mathematical statements for 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.</li> <li>Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.</li> </ul>                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Progression of skills</b>                                                                                                                      | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Divide by 3</b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts. | There are ... groups of 3 in ...<br>$\dots \div 3 =$<br> $2 \times 3 = 6$<br>$6 \div 3 = 2$<br>                                                                                                                                                                                                                                                   | ... has been shared equally into 3 equal groups.<br>$\dots \div 3 =$<br> $2 \times 3 = 6$<br>$6 \div 3 = 2$<br>   |
| <b>Divide by 4</b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts. | There are ... groups of 4 in ...<br>$\dots \div 4 =$<br> $2 \times 4 = 8$<br>$8 \div 4 = 2$<br>                                                                                                                                                                                                                                                   | ... has been shared equally into 4 equal groups.<br>$\dots \div 4 =$<br> $2 \times 4 = 8$<br>$8 \div 4 = 2$<br>   |
| <b>Progression of skills</b>                                                                                                                      | <b>Key representations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Divide by 8</b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts. | There are ... groups of 8 in ...<br>$\dots \div 8 =$<br> $2 \times 8 = 16$<br>$16 \div 8 = 2$<br>                                                                                                                                                                                                                                           | ... has been shared equally into 8 equal groups.<br>$\dots \div 8 =$<br>   $2 \times 8 = 16$<br>$16 \div 8 = 2$                                                                                |
| <b>Related facts</b><br><br>Link to known times-table facts.                                                                                      | ... $\div$ ... is equal to ...,<br>so ... tens $\div$ ... is equal to ... tens.<br>     $12 \div 3 = 4$<br>$120 \div 3 = 40$                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Divide a 2-digit number by a 1-digit number - no exchange</b><br><br>Partition into tens and ones to divide and then recombine.                | ... tens divided by ... is equal to ... tens.<br>... ones divided by ... is equal to ... ones.<br>  $60 \div 2 = 30$<br>$4 \div 2 = 2$<br>$64 \div 2 = 32$<br>   |                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

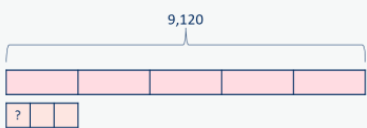
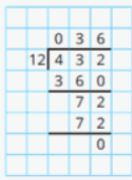
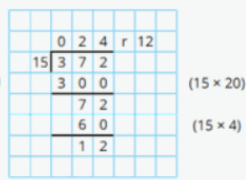
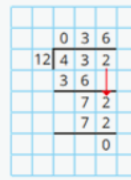
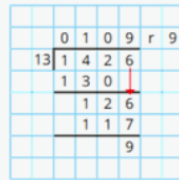
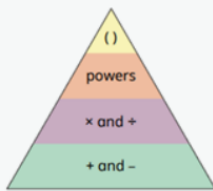
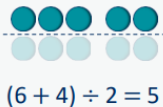
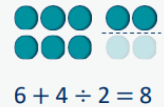
| Progression of skills                                                                                                                                                          | Key representations                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                               |
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| <p><b>Divide a 2-digit number by a 1-digit number - with remainders</b></p> <p>Encourage children to partition numbers flexibly to help them to divide more efficiently.</p>   | <p>... tens divided by ... is equal to ... tens.<br/>... ones divided by ... is equal to ... ones.</p>  <p> <math>96 \div 4</math><br/> <math>80 \div 4 = 20</math><br/> <math>16 \div 4 = 4</math><br/> <math>96 \div 4 = 24</math> </p> | <p>There are ... groups of ...<br/>There are ... remaining.</p> <p><math>31 \div 4 = 7 \text{ r}3</math></p>  <p><math>94 \div 4 = 23 \text{ r}2</math></p>                                               |
| <p><b>Unit fractions of a set of objects</b></p> <p>Bar models are useful to show the link between division and fractions, for example, dividing by 3 and finding a third.</p> | <p>The whole is divided into ... equal parts.<br/>Each part is <math>\frac{1}{\square}</math> of the whole.</p>  <p><math>\frac{1}{4}</math> of 12 apples is 3 apples.</p>                                                                | <p>One ... of ... is ...</p> <p><math>\frac{1}{4}</math> of 12 is 3</p>  <p><math>\frac{1}{3}</math> of 36 is 12</p>                                                                                    |
| Progression of skills                                                                                                                                                          | Key representations                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>Non-unit fractions of a set of objects</b></p> <p>Bar models are a useful representation and show the links with division and multiplication.</p>                        | <p>The whole is divided into ... equal parts.<br/>Each part is <math>\frac{1}{\square}</math> of the whole.</p>  <p><math>\frac{3}{4}</math> of 12 apples is 9 apples.</p>                                                              | <p><math>\frac{1}{\square}</math> of ... is ..., so <math>\frac{\square}{\square}</math> of ... is ...</p> <p><math>\frac{3}{4}</math> of 12 is 9</p>  <p><math>\frac{2}{3}</math> of 36 is 24</p>  |

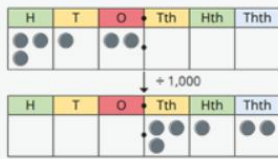
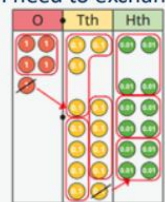
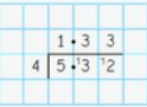
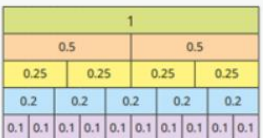
| Year 4                                                                                                                                                                            | <ul style="list-style-type: none"><li>Recall division facts for multiplication tables up to <math>12 \times 12</math></li><li>Use place value, known and derived facts to divide mentally, including: dividing by 1</li><li>Find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths.</li></ul>                                             |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
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| Progression of skills                                                                                                                                                             | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| <b>Division facts to <math>12 \times 12</math></b><br><br>Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts. | There are ... groups of ... in ...<br>$\dots \div \dots =$<br> $2 \times 6 = 12$ $12 \div 6 = 2$                                                                                                                                                                                                                                                         | ... has been shared equally into ... equal groups.<br>$\dots \div \dots =$<br> $2 \times 6 = 12$ $12 \div 6 = 2$                                                                                        |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| <b>Divide a number by 1 and itself</b><br><br>Children may try to divide a number by zero and it should be highlighted that this is not possible.                                 | When I divide a number by 1, the number remains the same.<br><br>5 shared between 1 is 5 <br><br>There are 5 groups of 1 in 5                                                                                                                                           | When I divide a number by itself, the answer is 1<br><br>5 shared between 5 is 1 <br><br>There is 1 group of 5 in 5  |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| Progression of skills                                                                                                                                                             | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| <b>Related facts</b><br><br>Link to known times-table facts.                                                                                                                      | $\dots \div \dots$ is equal to ...<br>so ... tens $\div$ ... is equal to ... tens<br>and ... hundreds $\div$ ... is equal to ... hundreds.<br> $21 \div 7 = 3$ $210 \div 7 = 30$ $2,100 \div 7 = 300$ $21 \div 3 = 7$ $210 \div 3 = 70$ $2,100 \div 3 = 700$                                                                                           |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| <b>Divide a 2 or 3-digit number by a 1-digit number</b><br><br>Progress from divisions with no exchange, to divisions with exchange and then divisions with remainders.           | I can partition ... into ... tens and ... ones.<br> $80 \div 4 = 20$ $4 \div 4 = 1$ $84 \div 4 = 21$ <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>20</td><td>1</td></tr><tr><td>20</td><td>1</td></tr><tr><td>20</td><td>1</td></tr><tr><td>20</td><td>1</td></tr></tbody></table> | Tens                                                                                                                                                                                                                                                                                      | Ones | 20 | 1 | 20 | 1 | 20 | 1 | 20 | 1 | I cannot share the hundreds/tens equally, so I need to exchange 1 ... for 10 ...<br> $300 \div 3 = 100$ $120 \div 3 = 40$ $15 \div 3 = 5$ $435 \div 3 = 145$ <table border="1"><thead><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td>100</td><td>40</td><td>5</td></tr><tr><td>100</td><td>40</td><td>5</td></tr><tr><td>100</td><td>40</td><td>5</td></tr></tbody></table> | Hundreds | Tens | Ones | 100 | 40 | 5 | 100 | 40 | 5 | 100 | 40 | 5 |
| Tens                                                                                                                                                                              | Ones                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 20                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 20                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 20                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 20                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                           |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| Hundreds                                                                                                                                                                          | Tens                                                                                                                                                                                                                                                                                                                                                                                                                                      | Ones                                                                                                                                                                                                                                                                                      |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 100                                                                                                                                                                               | 40                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                                                                                                                                                                                                                                                                                         |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 100                                                                                                                                                                               | 40                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                                                                                                                                                                                                                                                                                         |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |
| 100                                                                                                                                                                               | 40                                                                                                                                                                                                                                                                                                                                                                                                                                        | 5                                                                                                                                                                                                                                                                                         |      |    |   |    |   |    |   |    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |      |      |     |    |   |     |    |   |     |    |   |

| Progression of skills                                                                                                     | Key representations                                                                                         |                                                                                                                   |                                                                                    |                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Divide by 10 and 100</b><br><br>Encourage children to notice that dividing by 100 is the same as dividing by 10 twice. | When I divide by 10, the digits move 1 place value column to the right.<br>... is one-tenth the size of ... | When I divide by 100, the digits move 2 place value columns to the right.<br>... is one-hundredth the size of ... |                                                                                    |                                                                                     |
|                                                                                                                           |                            |                                  |  |  |
|                                                                                                                           |                            |                                  |  |  |
|                                                                                                                           | $2 \div 10 = 0.2$                                                                                           | $12 \div 10 = 1.2$                                                                                                | $2 \div 100 = 0.02$                                                                | $12 \div 100 = 0.12$                                                                |

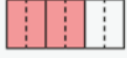
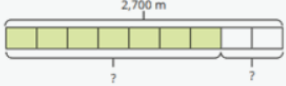
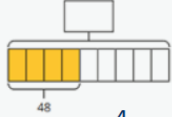
| <b>Year 5</b>                                                                                                               | <ul style="list-style-type: none"> <li>Divide numbers mentally drawing upon known facts.</li> <li>Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context.</li> <li>Divide whole numbers and those involving decimals by 10, 100 and 1,000</li> </ul>      |                                                                                                                                       |                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Progression of skills                                                                                                       | Key representations                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                       |                                                                                                                                                                 |
| <b>Mental strategies</b>                                                                                                    | I can partition ... into ... and ... to help me to divide more easily.<br><br>                                                                                                                                                                                                | I can show groups of ... on a number line.<br><br> | To divide by ..., I can divide by ... and then divide the result by ...<br><br>$436 \div 4 = 436 \div 2 \div 2$<br><br>$436 \div 2 = 218$<br>$218 \div 2 = 109$ |
| <b>Divide numbers up to 4 digits by a 1-digit number</b><br><br>The short division method is introduced for the first time. | There are ... groups of ... hundreds/tens/ones/ in ...<br>I can exchange 1 ... for 10 ...<br><br>   |                                                                                                                                       |                                                                                                                                                                 |

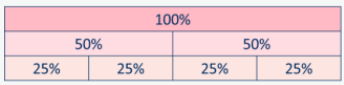
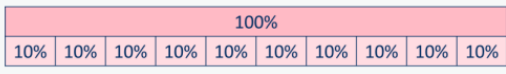
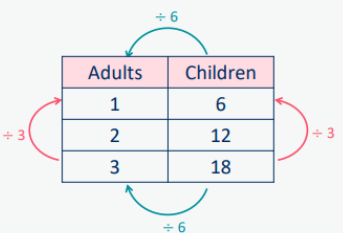
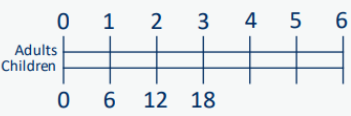
| Progression of skills                                                                                                                                                                                  | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Divide by 10, 100 and 1,000</b><br><br>Encourage children to notice that dividing by 100 is the same as dividing by 10 twice, and that dividing by 1,000 is the same as dividing by 10 three times. | <p>To divide by 10/100/1,000, I move all the digits ... places to the right.<br/>... is one-tenth/one-hundredth/one-thousandth the size of ...</p> <div> <div>ThH T O Tth Hth</div> <div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> </div> </div> <div> <div>ThH T O Tth Hth</div> <div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> </div> </div> <div> <div>ThH T O Tth Hth</div> <div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> </div> </div> <div> <div>ThH T O Tth Hth</div> <div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> <div>●●●●●</div> </div> </div> <div> <math>120 \div 10 = 12</math><br/><br/> <math>120 \div 100 = 1.2</math><br/><br/> <math>120 \div 1,000 = 0.12</math> </div>                                                                                                                                                                                                                                  |
| <b>Fraction of an amount</b><br><br>Bar models support children to understand that to find a fraction of an amount, we divide by the denominator and multiply by the numerator.                        | <p>To find <math>\frac{\square}{\square}</math> of ... , I need to divide by ... and multiply by ...</p> <div> <div>●●●●●●●●●●●●●●●●</div> <div> <div>10 10 10 10 10 10 10 10</div> <div>1 1 1 1 1 1 1 1</div> </div> </div> <div> <math>\frac{1}{5}</math> of 20 =<br/> <math>\frac{3}{5}</math> of 20 = </div> <div> <math>\frac{1}{4}</math> of 84 =<br/> <math>\frac{3}{4}</math> of 84 = </div> <p>If <math>\frac{1}{\square}</math> is ... , then the whole is ... <math>\times</math> ...</p> <div> <div> <div>?</div> <div>6 6 6 6 6</div> </div> <div> <div>?</div> <div>24</div> </div> </div> <div> <math>\frac{1}{5}</math> of ___ = 6<br/><br/> <math>\frac{4}{7}</math> of ___ = 24 </div>                                                                                                                                                                                                                                                                                                                  |
| <b>Year 6</b>                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>Perform mental calculations, including with mixed operations and large numbers.</li> <li>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context.</li> <li>Divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context.</li> <li>Divide numbers by 10, 100 and 1,000 giving answers up to three decimal places.</li> <li>Use written division methods in cases where the answer has up to two decimal places.</li> <li>Associate a fraction with division and calculate decimal fraction equivalents.</li> <li>Divide proper fractions by whole numbers [for example, <math>\frac{1}{3} \div 2 = \frac{1}{6}</math>]</li> <li>Solve problems involving the calculation of percentages.</li> </ul> |
| Progression of skills                                                                                                                                                                                  | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Short division</b><br><br>Encourage children to interpret remainders in context, for example knowing that "4 remainder 1" could mean 4 complete boxes with 1 left over so 5 boxes will be needed.   | <p>There are ... groups of ... hundreds/tens/ones/ in ...<br/>I can exchange 1 ... for 10 ...</p> <div> <div>ThH T O</div> <div> <div>100 100 100 100 100 100 100 100</div> <div>100 100 100 100 100 100 100 100</div> <div>10 10 10 10 10 10 10 10</div> <div>1 1 1 1 1 1 1 1</div> </div> </div> <div> <div>2 1 3 1</div> <div>4 8 5 2 4</div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Progression of skills                                                                                                                                                      | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Mental strategies</b><br><br>Include partitioning and number line strategies outlined in Y5 as well as division using factors.                                          | To divide by ... , I can first divide by ... and then divide the answer by ...<br><br>$240 \div 60 = 240 \div 10 \div 6$<br><br>$480 \div 24 = 480 \div 4 \div 6$<br><br><br>$9,120 \div 15 = 9,120 \div 5 \div 3$<br> |                                                                                                                                                                                                |
| <b>Long division</b><br><br>The long division method is introduced for the first time. Two alternative methods are shown.                                                  | <b>Method 1</b><br><br>                                                                                                                                                                                                                                                                                   | <b>Method 2</b><br><br>  |
| <b>Order of operations</b><br>Calculations in brackets should be done first, then powers. Multiplication and division should be performed before addition and subtraction. | ... has greater priority than ..., so the first part of the calculation I need to do is ...<br><br>                                                                                                                   |                                                                                                                                                                                                |

| Progression of skills                                                                                                                                                                              | Key representations                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Divide by 10, 100 and 1,000</b><br>Encourage children to notice that dividing by 100 is the same as dividing by 10 twice, and that dividing by 1,000 is the same as dividing by 10 three times. | To divide by ... , I move the digits ... places to the right.<br><br> $312 \div 10 = 31.2$<br>$312 \div 100 = 3.12$<br>$312 \div 1,000 = 0.312$<br><br>$906 \div 10 = 90.6$<br>$906 \div 100 = 9.06$<br>$906 \div 1,000 = 0.906$                                                                                            |                                                                                                                                                                                                                        |
| <b>Divide decimals by integers</b><br><br>This is the first time children divide decimals by numbers other than 10, 100 or 1,000                                                                   | I know that ... $\div$ ... = ..., so I also know that ... $\div$ ... = ...<br><br>  <br><br>$39 \div 3 = 13$ $3.9 \div 3 = 1.3$ $0.39 \div 3 = 0.13$ | I need to exchange 1 ... for 10 ...<br><br>  |
| <b>Decimal and fraction equivalents</b>                                                                                                                                                            | The fraction ... is equivalent to the decimal ...<br><br> <br><br>$\frac{1}{5} = 0.2$ $\frac{2}{5} = 0.4$ $\frac{3}{5} = 0.6$                                                                                                           |                                                                                                                                                                                                                        |

$\frac{3}{4}$  is equal to  $\frac{\quad}{100}$   
 $\frac{3}{4} = \frac{75}{100} = 0.75$

| Progression of skills                                                                                                                                                | Key representations                                                                                                                                                                                                                            |                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Divide a fraction by an integer</b><br><br>This is the first time children divide fractions by an integer.                                                        | ... ones divided by 2 is ... ones so ... sevenths divided by 2 is ... sevenths.<br><br> $\frac{4}{7} \div 4 = \frac{1}{7}$ $\frac{4}{7} \div 2 = \frac{2}{7}$ | I am dividing by ... , so I can split each part into ... equal parts.<br><br> $\frac{1}{3} \div 2 = \frac{1}{6}$                                          | ... is equivalent to ... so ... $\div$ ... = ... $\div$ ...<br><br> $\frac{2}{3} = \frac{4}{6}$<br>so $\frac{2}{3} \div 4 = \frac{4}{6} \div 4 = \frac{1}{6}$ |
| <b>Fraction of an amount</b><br><br>Children divide and multiply to find fractions of an amount. Bar models can still be used to support understanding where needed. | To find $\frac{1}{\square}$ I divide by ...<br><br>$\frac{1}{2}$ of 36 = $36 \div 2$<br><br>$\frac{1}{12}$ of 36 = $36 \div 12$                                                                                                                | If $\frac{1}{\square}$ is equal to ..., then $\square$ are equal to ...<br><br> $\frac{7}{9} \text{ of } 2,700 = \frac{1}{9} \text{ of } 2,700 \times 7$ | If $\square$ is equal to ..., then the whole is equal to ...<br><br> $\frac{4}{9} \text{ of } \underline{\hspace{1cm}} = 48$                                  |

| Progression of skills                                                                                                                                                                                                                                                                                                                      | Key representations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Calculate percentages</b><br><br>Children first learn how to find 1%, 10%, 20%, 25% and 50% before using multiples of these amounts to find any percentage.                                                                                                                                                                             | There are ... lots of ... % in 100%<br>To find ... %, I need to divide by ...<br><br> $50\% \text{ of } \dots = \dots \div 2$ $25\% \text{ of } \dots = \dots \div 4$                                                                                                                                                                                                                                                                                | ... % is made up of ... %, and ... %<br><br><br>To find 30%, I can find 10% and then multiply it by 3<br>To find 23%, I can use 10% $\times$ 2 and 1% $\times$ 3<br>To find 99%, I can find 1%, then subtract from 100% |
| <b>Calculations involving ratio</b><br><br>Encourage children to see the multiplicative relationship between ratios. They will need to multiply or divide each value by the same number to keep the ratio equivalent. Double number lines and ratio tables help children to see both horizontal and vertical multiplicative relationships. | For every ... , there are ...<br><br>For every 6 children on a school trip, there is 1 adult.<br><br>adults <br><br>children <br><br><br><br>The ratio of children to adults is 6 : 1 |                                                                                                                                                                                                                                                                                                           |