



# *Calculation Policy*

*Reviewed: Autumn 2021*

*Review Date: Spring 2023*

.....  
Head Teacher

.....  
Date

.....  
Chair of Governors

.....  
Date



# **ESSENTIALmaths:**

# **Written**

# **Calculation**

# **Progression**

**HERTS FOR LEARNING**  
**PRIMARY MATHS TEACHING AND LEARNING TEAM**

# Written Calculation Progression

This document maps the Herts for Learning (HfL) ESSENTIALmaths pathway to the required written formal calculation methods as outlined in the National Curriculum (2013) [Mathematics Appendix 1: Examples of formal written methods for addition, subtraction, multiplication and division.](#)

The HfL ESSENTIALmaths Written Calculation Progression links the key concrete experiences with pictorial and abstract representations (written symbolic and spoken). This supports pupils to move with confidence and deep conceptual understanding through each strand of calculation.

## **The Importance of Mental Mathematics**

While this policy focuses on written calculation in mathematics, HfL ESSENTIALmaths recognises the importance of mental strategies and known facts that form the basis of all calculations. A range of mental strategies are developed throughout ESSENTIALmaths. Pupils are provided with frequent opportunities to compare and evaluate different calculation strategies. This helps them develop an understanding that efficiency is personal and based on the numbers involved.

## **Concrete, Pictorial and Abstract**

### *Concrete manipulatives*

Concrete manipulatives are objects that can be touched and moved by pupils to introduce, explore or reinforce a mathematical concept. They provide a vehicle to help pupils make sense of complex, symbolic and abstract ideas through exploration and manipulation. Furthermore, they support the development of internal models and help build stronger memory pathways.

### *Pictorial (including jottings)*

The act of translating the concrete experience into a pictorial representation helps focus attention on what has happened and why. This supports deeper understanding and a stronger imprint on memory. Pictorial representations are more malleable than concrete resources and, once understanding is secured, allow exploration of complex problems that may be challenging to reproduce with manipulatives.

### *Abstract - Written*

The aim, within this policy, is for compacted forms of notation. These have developed through the history of mathematics. Explicit individual steps in procedure are hidden or they have been shortcut. The informal and expanded methods expose all the intermediate steps, replicating thought processes more closely and support understanding prior to compaction.

*Abstract - Spoken*

Learning to use the correct mathematical vocabulary is vital for the development of mathematical proficiency. The ability to articulate accurately allows pupils to communicate and build meaning. Ideas become more permanent. This can be scaffolded effectively using speaking frames.

## Addition and Subtraction

# Progression

|              | <b>Addition</b>  | <b>Subtraction</b>   |
|--------------|--|--|
| <b>2LS15</b> | Step 3: Expanded written method; no regrouping (2-digit numbers)   | 2LS17 Step 4: Expanded written subtraction; a 2-digit number from a 2-digit number with no regrouping. |
|              | Step 4: Expanded written method; regrouping of ones (2-digit numbers)  | Step 5: Expanded written subtraction; a 2-digit number from a 2-digit number with regrouping.          |
| <b>3LS8</b>  | Step 2: Formal written method; no regrouping (3-digit numbers)   | Step 1: Formal written subtraction; no regrouping (up to 3-digit numbers)                              |
|              | Step 3: Formal written method; regrouping of ones (3-digit numbers)  | Step 2: Formal written subtraction; regrouping tens into ones (up to 3-digit numbers)                  |
| <b>4LS4</b>  | Step 4: Formal written method; regrouping of tens (3-digit numbers)  | Step 3: Formal written subtraction; regrouping hundreds into tens (up to 3-digit numbers)              |
|              | Step 4: Formal written method; regrouping of tens and ones (3-digit numbers)   | Step 4: Formal written subtraction; regrouping hundreds and tens (up to 3-digit numbers)               |
| <b>5LS10</b> | Step 1: Formal written method; no regrouping (4-digit numbers)*  | 4LS4 Step 5: Formal written subtraction (revisit)*   |
|              | Step 2: Formal written method; regrouping in hundreds, tens and ones (4-digit numbers)*                              | Step 6: Formal written subtraction; regrouping of thousands*   |
|              | Step 3: Formal written method; regrouping hundreds, tens and ones causing further thousand column (4-digit numbers)* |  |
|              | Step 2: Formal column addition*  | 5LS10 Step 3: Formal column subtraction*   |

\* indicates that the step is not explicitly exemplified within this progression, as it is a revisit or extension of previously taught

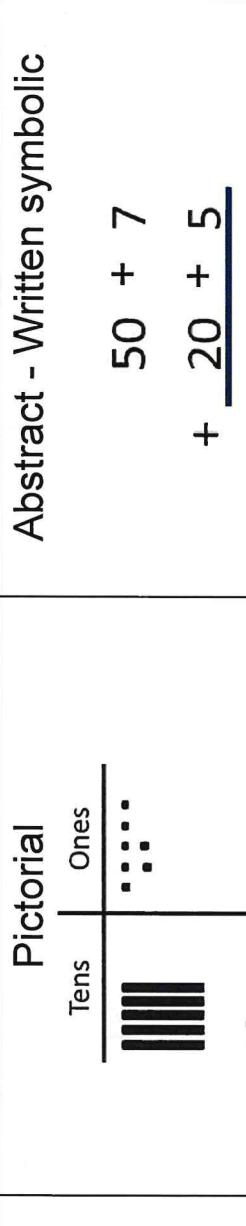
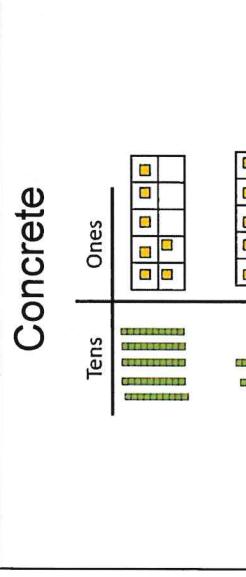
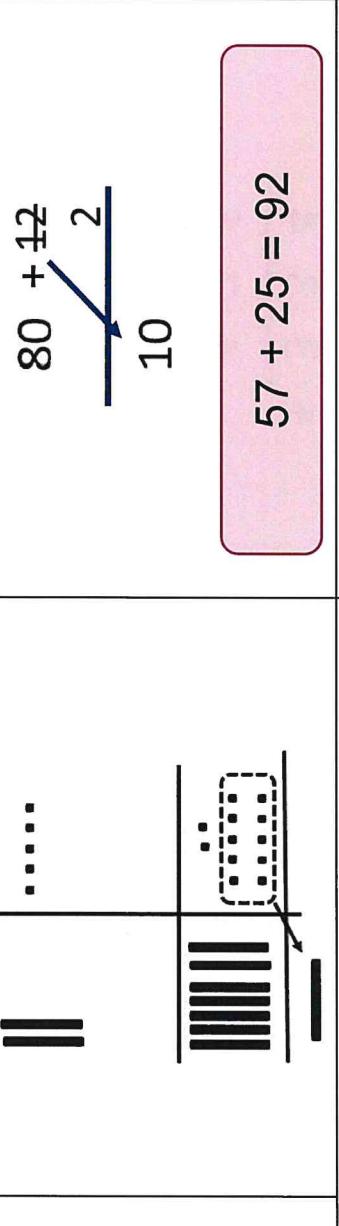
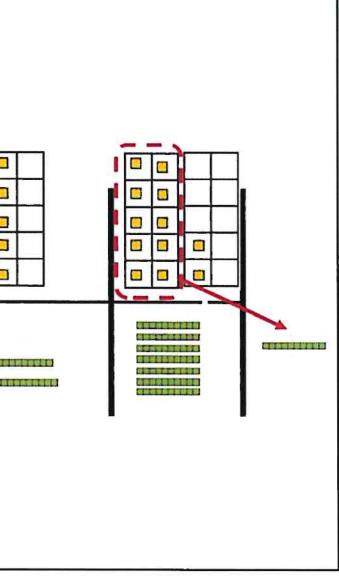
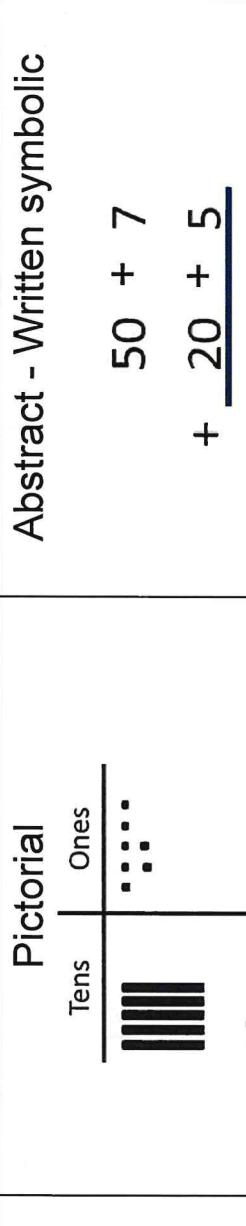
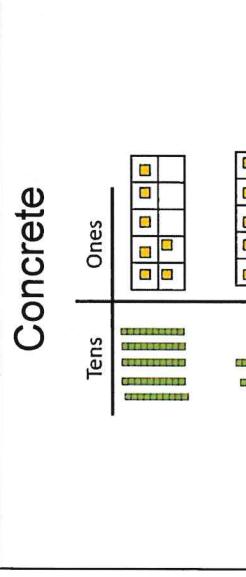
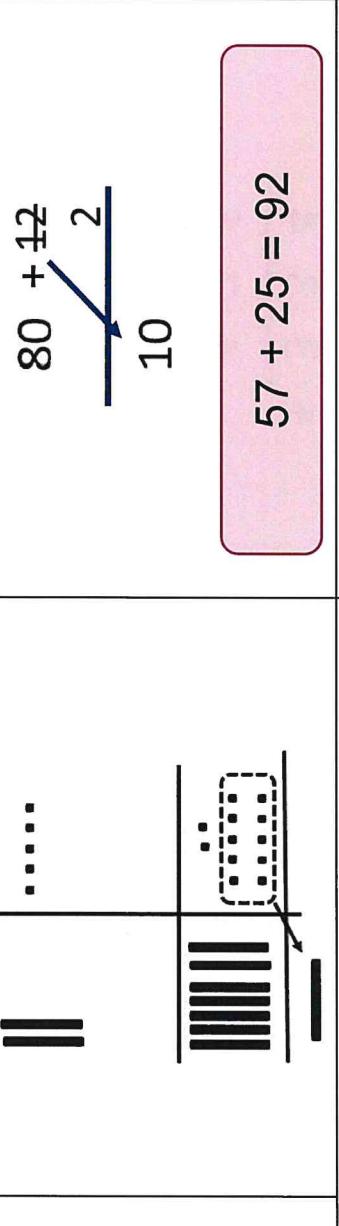
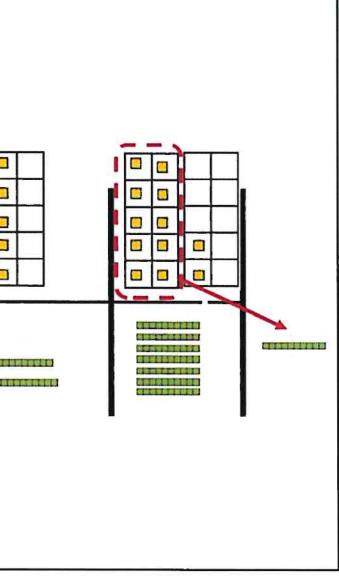
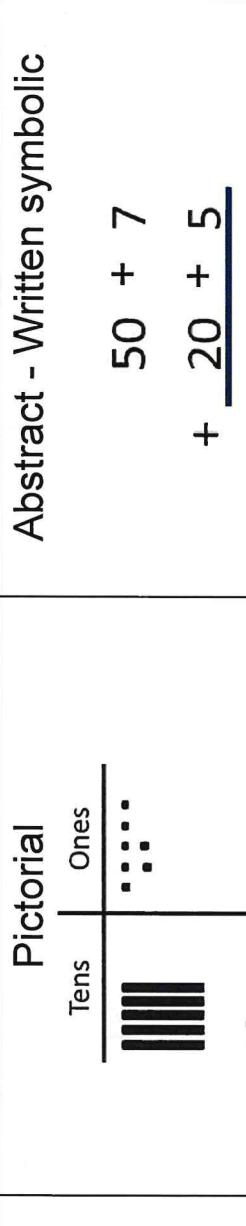
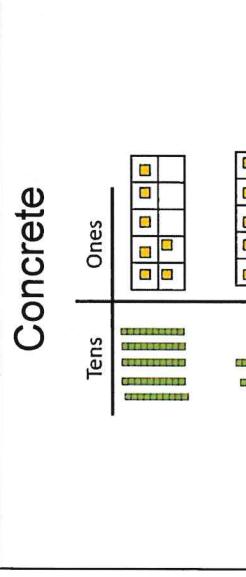
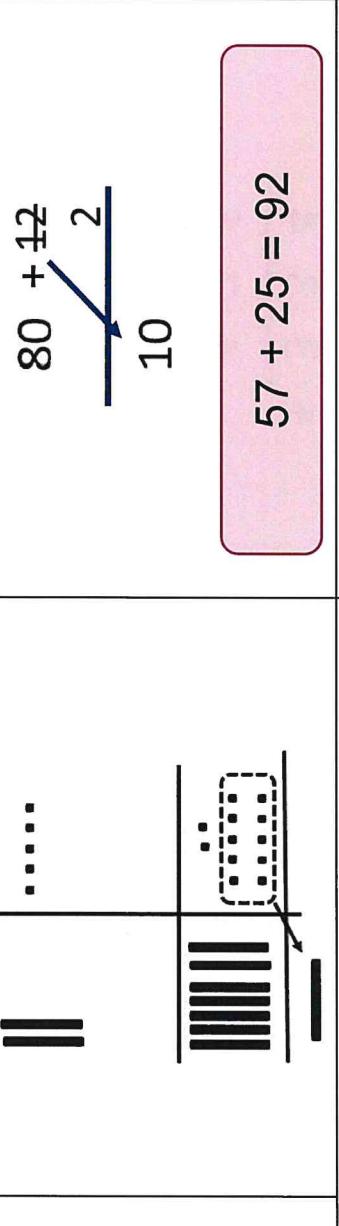
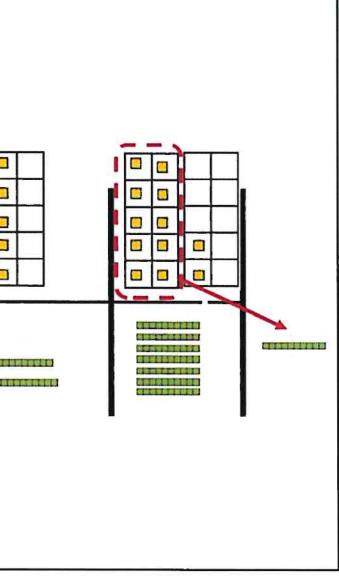
## Multiplication and Division

# Progression

|              | <b>Multiplication</b>   | <b>Division</b> |   |  |
|--------------|---|-----------------|---|--|
| <b>3LS26</b> | Step 3: Short multiplication; no regrouping   | <b>3LS30</b>    | Step 2: Long division (sharing structure); sharing ones   |  |
|              | Step 4: Short multiplication; regrouping of ones into tens                                    |                 | Step 3: Long division (sharing structure); no regrouping (2-digit dividend)   |  |
|              | Step 5: Short multiplication; regrouping of tens and ones                                     |                 | Step 4: Long division (sharing structure); regrouping (2-digit dividend)  |  |
| <b>4LS24</b> | Step 4: Short multiplication; no regrouping (revisit)*  | <b>4LS25</b>    | Step 2: Long division (sharing structure); regrouping hundreds into tens (up to 3-digit numbers by 1-digit divisor)         |  |
|              | Step 5: Short multiplication; with regrouping causing further thousand column                 |                 | Step 4: Short division (sharing structure); 1-digit divisor   |  |
| <b>5LS11</b> | Step 1: Short multiplication; up to 3-digit numbers (revisit)*                                | <b>5LS12</b>    | Step 2: Short division (grouping structure); regrouping tens  |  |
|              | Step 2: Expanded vertical multiplication; 2-digit by 2-digit numbers                          |                 | Step 3: Short division (grouping structure); regrouping hundreds and tens   |  |
|              | Step 3: Long multiplication; regrouping in first stage only, 2-digit by 2-digit numbers       |                 | Step 4: Short division (grouping structure); expressing quotients with fractions  |  |
|              | Step 3: Long multiplication; regrouping in first and second stage, 2-digit by 2-digit numbers |                 | Step 5: Short division (grouping structure); expressing quotients with decimals   |  |
| <b>6LS12</b> | Step 5: Short multiplication, up to 2 decimal places by 1-digit number                        | <b>6LS17</b>    | Step 2: Long division (grouping structure); up to 4-digit dividend by 2-digit divisor                                       |  |
|              | <b>Year 6 additional examples</b>   |                 |   |  |
| <b>6LS12</b> | Step 3: Long multiplication; 4-digit by 2-digit numbers                                       | <b>6LS17</b>    | Step 4: Long division (grouping structure); up to 4-digit dividend by 2-digit divisor - expressing quotients with fractions |  |
|              |   | <b>6LS17</b>    | Step 5: Long division (grouping structure); up to 4-digit dividend by 2-digit divisor - expressing quotients with decimals  |  |

\* indicates that the step is not explicitly exemplified within this progression, as it is a revisit or extension of previously taught

| Year 2  | NC Statement:  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|---|--|-----------------------------|-----------|-----------------------------|---|------|------|--|---|------|------|---|---|---|------|------|---|----------------|---|---|---|---|----------------|
|   | Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:<br>- a two-digit number and ones<br>- a two-digit number and tens<br>- two, two-digit numbers   |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|   | <i>2LS15 Step 3: Expanded written method with no regrouping (2-digit numbers)</i>  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|   | <table border="1"> <thead> <tr> <th>Concrete</th> <th>Pictorial</th> <th>Abstract - Written symbolic</th> </tr> </thead> <tbody> <tr> <td> <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> </tbody> </table> </td> <td> <table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>5</td> </tr> <tr> <td>+</td> <td>+</td> </tr> <tr> <td>7</td> <td>8</td> </tr> </tbody> </table> </td> <td> <math display="block">43 + 35 = 78</math> </td> </tr> </tbody> </table> | Concrete                    | Pictorial | Abstract - Written symbolic | <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> </tbody> </table> | Tens | Ones |  |   |      |      |   |   | <table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>5</td> </tr> <tr> <td>+</td> <td>+</td> </tr> <tr> <td>7</td> <td>8</td> </tr> </tbody> </table> | Tens | Ones | 3 | 5              | + | + | 7 | 8 | $43 + 35 = 78$ |
| Concrete  | Pictorial  | Abstract - Written symbolic |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
| <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> </tbody> </table> | Tens   | Ones                        |           |                             |   |      |      |  | <table border="1"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td>3</td> <td>5</td> </tr> <tr> <td>+</td> <td>+</td> </tr> <tr> <td>7</td> <td>8</td> </tr> </tbody> </table> | Tens | Ones | 3 | 5 | +   | +    | 7    | 8 | $43 + 35 = 78$ |   |   |   |   |                |
| Tens  | Ones   |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|   |  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|   |  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|   |  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
| Tens  | Ones   |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
| 3   | 5  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
| +   | +  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
| 7   | 8  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |
|   | <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 10px;"> <p>The sum of ... ones and ... ones is ... ones.<br/>     The sum of ... tens and ... tens is ... tens.<br/>     So, ... + ... is equal to ... tens and ... ones, which is ...</p> </div>  |                             |           |                             |   |      |      |  |   |      |      |   |   |   |      |      |   |                |   |   |   |   |                |

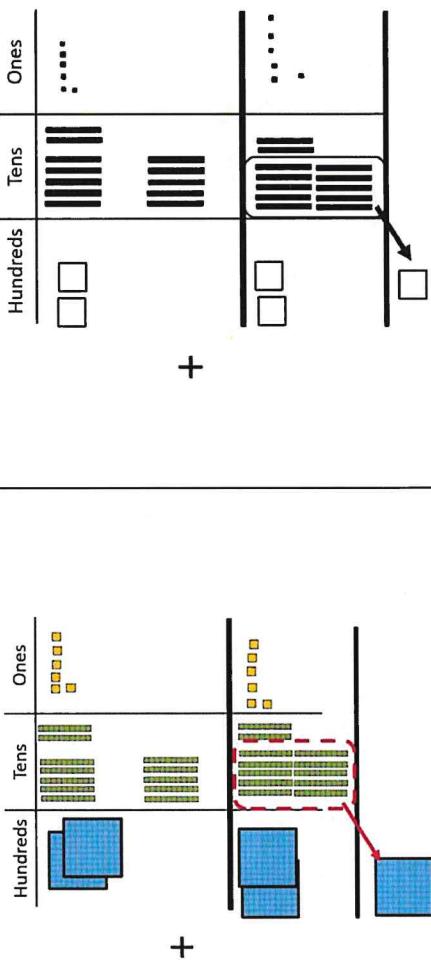
| Year 2  | <p><b>NC Statement:</b><br/>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:<br/>           - a two-digit number and ones<br/>           - a two-digit number and tens<br/>           - two, two-digit numbers</p> <p><b>2LS15 Step 4: Expanded written method with regrouping of ones (2-digit numbers)</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th data-bbox="417 300 663 2103"><b>Concrete</b></th><th data-bbox="663 300 1002 2103"><b>Pictorial</b></th><th data-bbox="1002 300 1321 2103"><b>Abstract - Written symbolic</b></th></tr> </thead> <tbody> <tr> <td data-bbox="417 300 663 2103">  <br/>  </td><td data-bbox="663 300 1002 2103">  <br/>  </td><td data-bbox="1002 300 1321 2103"> <math display="block">  \begin{array}{r}  50 + 7 \\  + 20 + 5 \\  \hline  80 + 12 \\  \hline  10  \end{array}  </math> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: 0;"> <math>57 + 25 = 92</math> </div> </td></tr> <tr> <td data-bbox="417 300 663 2103"></td><td data-bbox="663 300 1002 2103"></td><td data-bbox="1002 300 1321 2103"> <p><b>Notes:</b></p> <p>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> <p>Using embedded tens frame supports pupils to rapidly see the regroup and to keep their jottings organised.</p> </td></tr> </tbody> </table> <p><b>Abstract - Speaking frame</b></p> <div style="border: 1px solid red; padding: 10px; border-radius: 10px;"> <p>The sum of ... ones and ... ones is ... ones.<br/>           This is regrouped into ... ten and ... ones.<br/>           The sum of ... tens and ... tens is ... tens.<br/>           So, ... + ... is equal to ... tens and ... ones, which is ...</p> </div> | <b>Concrete</b>   | <b>Pictorial</b> | <b>Abstract - Written symbolic</b> | <br> | <br> | $  \begin{array}{r}  50 + 7 \\  + 20 + 5 \\  \hline  80 + 12 \\  \hline  10  \end{array}  $ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: 0;"> <math>57 + 25 = 92</math> </div> |  |  | <p><b>Notes:</b></p> <p>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> <p>Using embedded tens frame supports pupils to rapidly see the regroup and to keep their jottings organised.</p> |
|---|---|---|------------------|------------------------------------|---|---|---|--|--|---|
| <b>Concrete</b>   | <b>Pictorial</b>  | <b>Abstract - Written symbolic</b>  |                  |                                    |   |   |   |  |  |   |
| <br> | <br>   | $  \begin{array}{r}  50 + 7 \\  + 20 + 5 \\  \hline  80 + 12 \\  \hline  10  \end{array}  $ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: 0;"> <math>57 + 25 = 92</math> </div> |                  |                                    |   |   |   |  |  |   |
|   |   | <p><b>Notes:</b></p> <p>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> <p>Using embedded tens frame supports pupils to rapidly see the regroup and to keep their jottings organised.</p> |                  |                                    |   |   |   |  |  |   |

|   |   |
|---|---|
| <b>Year 3</b>   | <p><b>NC Statement:</b><br/>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p> <p><b>3LS8 Step 2: Formal written addition with no regrouping (up to three-digit numbers)</b></p>   |
| <p><b>Concrete</b></p> <p><b>Pictorial</b></p> <p><b>Abstract - Written symbolic</b></p> $  \begin{array}{r}  142 \\  + 334 \\  \hline  476  \end{array}  $ | <p><b>Notes:</b></p> <p>3LS8 Step 2 revisits the formal written method, first encountered in Year 2, with no regrouping but introduces hundreds.</p> <p>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 5px;"> <p>The sum of ... ones and ... ones is ... ones.<br/>     The sum of ... tens and ... tens is ... tens.<br/>     The sum of ... hundreds and ... hundreds is ... hundreds.<br/>     So, ... + ... is equal to ... hundreds, ... tens and ... ones, which is ... .</p> </div> |

|   |   |
|---|---|
| <b>Year 3</b>   | <p><b>NC Statement:</b><br/>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p> <p><b>3LS8 Step 3: Formal written addition with regrouping of ones (up to three-digit numbers)</b></p>  |
| <p><b>Concrete</b></p> <p><b>Pictorial</b></p> <p><b>Abstract - Written symbolic</b></p> $  \begin{array}{r}  247 \\  + 135 \\  \hline  382  \end{array}  $ | <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 10px; margin-bottom: 10px;"> <p>The sum of ... ones and ... ones is ... ones.<br/>The sum of ... tens and ... tens is ... tens.<br/>The sum of ... hundreds and ... hundreds is ... hundreds.<br/>So, ... + ... is equal to ... hundreds, ... tens and ... ones, which is ... .</p> </div> <p><b>Notes:</b></p> <p>The focus is on regrouping of ones.</p> <p>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> |

**NC Statement:**

Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction

**Year 3****3LS8 Step 4: Formal written addition with regrouping tens only (up to three-digit numbers)****Concrete****Pictorial**

| Hundreds | Tens | Ones  |
|----------|------|-------|
| 2        | 7    | 6     |
| + 5      | 0    |       |
|          |      | 3 2 6 |
|          |      | 1     |

**Abstract - Speaking frame**

The sum of ... ones and ... ones is ... ones.  
 This is regrouped into ... tens and ... ones.  
 The sum of ... tens and ... tens is ... tens.  
 The sum of ... hundreds and ... hundreds is ... hundreds.  
 So, ... + ... is equal to ... hundreds, ... tens and ... ones, which is ....

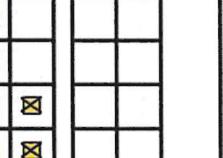
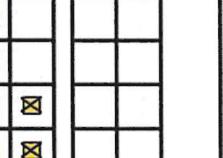
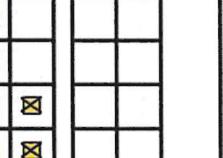
**Notes:**

The focus is on regrouping of tens.

Pupils should be encouraged to estimate first and check their answer using a mental method.

# Addition

| Year 3   | NC Statement:<br>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction  | <b>3LS8 Step 4: Formal written addition with regrouping tens and ones (up to three-digit numbers)</b> <table border="1" data-bbox="354 303 878 2103"> <thead> <tr> <th data-bbox="362 314 489 1885">Concrete</th><th data-bbox="489 314 878 1504">Pictorial</th><th data-bbox="878 314 1354 1504">Abstract - Written symbolic</th></tr> </thead> <tbody> <tr> <td data-bbox="362 1436 489 2103"> </td><td data-bbox="489 1436 878 2103"> </td><td data-bbox="878 1436 1354 2103"> <math display="block">  \begin{array}{r}  276 \\  + 56 \\  \hline  332  \end{array}  </math> </td></tr> </tbody> </table> | Concrete | Pictorial | Abstract - Written symbolic |  |  | $  \begin{array}{r}  276 \\  + 56 \\  \hline  332  \end{array}  $ |
|----------|---|---|----------|-----------|-----------------------------|--|--|---|
| Concrete | Pictorial   | Abstract - Written symbolic   |          |           |                             |  |  |   |
|          |   | $  \begin{array}{r}  276 \\  + 56 \\  \hline  332  \end{array}  $   |          |           |                             |  |  |   |
|          | <p><b>Abstract - Speaking frame</b></p> <p>The sum of ... ones and ... ones is ... ones.<br/>     This is regrouped into ... tens and ... ones.<br/>     The sum of ... tens and ... tens is ... tens.<br/>     This is regrouped into ... hundreds and ... tens.<br/>     The sum of ... hundreds and ... hundreds is ... hundreds.<br/>     So, ... + ... is equal to ... hundreds, ... tens and ... ones, which is ...</p> | <p><b>Notes:</b></p> <p>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> <p>Once pupils have fully understood and rehearsed regrouping within formal column addition of 3-digit numbers, this learning continues to be rehearsed and applied throughout Years 4, 5 and 6, including to 4-digit numbers, larger numbers, decimal numbers, money and measures.</p>   |          |           |                             |  |  |   |

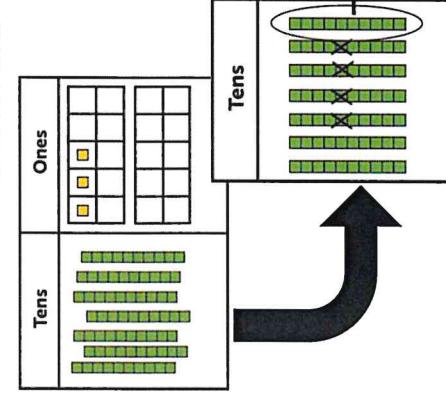
| Year 2 | <p><b>NC Statement:</b><br/>add and subtract numbers using concrete objects, pictorial representations, and mentally, including:<br/>           - a two-digit number and ones<br/>           - a two-digit number and tens<br/>           - two, two-digit numbers.</p> <p>2LS17 Step 4: Expanded written subtraction, a 2-digit number from a 2-digit number with no regrouping</p>  | <p><b>Abstract - Written symbolic</b></p> <p><math display="block">\begin{array}{r} 80 + 7 \\ - 30 + 4 \\ \hline 50 + 3 \end{array}</math></p> <p><math display="block">87 - 34 = 53</math></p> <p><b>Notes:</b><br/>Pupils should be encouraged to estimate first and check their answer using a mental method.</p> <p><b>Abstract - Speaking frame</b></p> <p>... ones take away ... ones leaves ... ones.<br/>           ... tens take away ... tens leaves ... tens.<br/>           So, ... - ... is equal to ... tens and ... ones, which is ... .</p> |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--------|---|---|------|--|---|--|--|--|--|--|--|--|--|--|--|------|------|--|---|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
|        | <p><b>Concrete</b></p> <table border="1" data-bbox="552 1544 886 2060"> <thead> <tr> <th data-bbox="552 1544 663 1611">Tens</th> <th data-bbox="663 1544 886 1611">Ones</th> </tr> </thead> <tbody> <tr> <td data-bbox="552 1611 663 1769"></td> <td data-bbox="663 1611 886 1769">  </td> </tr> <tr> <td data-bbox="552 1769 663 1836"></td> <td data-bbox="663 1769 886 1836"></td> </tr> <tr> <td data-bbox="552 1836 663 1903"></td> <td data-bbox="663 1836 886 1903"></td> </tr> <tr> <td data-bbox="552 1903 663 1971"></td> <td data-bbox="663 1903 886 1971"></td> </tr> <tr> <td data-bbox="552 1971 663 2038"></td> <td data-bbox="663 1971 886 2038"></td> </tr> <tr> <td data-bbox="552 2038 663 2105"></td> <td data-bbox="663 2038 886 2105"></td> </tr> </tbody> </table> <p><b>Pictorial</b></p> <table border="1" data-bbox="552 1028 854 1409"> <thead> <tr> <th data-bbox="552 1028 663 1095">Tens</th> <th data-bbox="663 1028 854 1095">Ones</th> </tr> </thead> <tbody> <tr> <td data-bbox="552 1095 663 1162"></td> <td data-bbox="663 1095 854 1162">  </td> </tr> <tr> <td data-bbox="552 1162 663 1230"></td> <td data-bbox="663 1162 854 1230"></td> </tr> <tr> <td data-bbox="552 1230 663 1297"></td> <td data-bbox="663 1230 854 1297"></td> </tr> <tr> <td data-bbox="552 1297 663 1364"></td> <td data-bbox="663 1297 854 1364"></td> </tr> <tr> <td data-bbox="552 1364 663 1432"></td> <td data-bbox="663 1364 854 1432"></td> </tr> <tr> <td data-bbox="552 1432 663 1499"></td> <td data-bbox="663 1432 854 1499"></td> </tr> <tr> <td data-bbox="552 1499 663 1567"></td> <td data-bbox="663 1499 854 1567"></td> </tr> <tr> <td data-bbox="552 1567 663 1634"></td> <td data-bbox="663 1567 854 1634"></td> </tr> <tr> <td data-bbox="552 1634 663 1701"></td> <td data-bbox="663 1634 854 1701"></td> </tr> <tr> <td data-bbox="552 1701 663 1769"></td> <td data-bbox="663 1701 854 1769"></td> </tr> <tr> <td data-bbox="552 1769 663 1836"></td> <td data-bbox="663 1769 854 1836"></td> </tr> <tr> <td data-bbox="552 1836 663 1903"></td> <td data-bbox="663 1836 854 1903"></td> </tr> <tr> <td data-bbox="552 1903 663 1971"></td> <td data-bbox="663 1903 854 1971"></td> </tr> <tr> <td data-bbox="552 1971 663 2038"></td> <td data-bbox="663 1971 854 2038"></td> </tr> <tr> <td data-bbox="552 2038 663 2105"></td> <td data-bbox="663 2038 854 2105"></td> </tr> </tbody> </table> | Tens  | Ones |  |  |  |  |  |  |  |  |  |  |  |  | Tens | Ones |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tens   | Ones  |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |    |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Tens   | Ones  |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |    |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|        |   |   |      |  |   |  |  |  |  |  |  |  |  |  |  |      |      |  |   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

**NC Statement:**

- add and subtract numbers using concrete objects, pictorial representations, and mentally, including:
- a two-digit number and ones
  - a two-digit number and tens
  - two, two-digit numbers.

*2LS17 Step 5: Expanded written subtraction, a 2-digit number from a 2-digit number with regrouping*

| Concrete | Pictorial | Abstract - Written symbolic  |
|----------|-----------|--|
|          |           | $  \begin{array}{r}  60 & 13 \\  70 & + 3 \\  - & 40 & + 6 \\  \hline  20 & + 7  \end{array}  $ <p><b>73 – 46 = 27</b></p> |

**Abstract - Speaking frame**

I can see that there aren't enough ones for me to take away ... ones without regrouping.  
 Regroup one ten into ten ones.  
 There are now ... tens and ... ones.  
 ... ones take away ... ones leaves ... ones.  
 ... tens take away ... tens leaves ... tens.  
 So, ... – ... is equal to... tens and ... ones, which is ... .

**Notes:**

Using embedded tens frame supports pupils to regroup accurately and to keep their jottings organised.

**Speaking frame note:** "I can see that there aren't enough ones for me to take away 6 ones without regrouping. Regroup one ten into ten ones. There are now 6 tens and 13 ones."

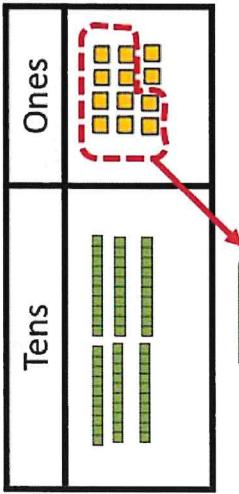
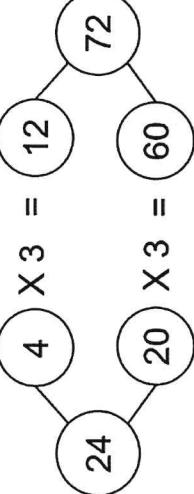
| <b>Year 3</b>                      | <p><b>NC Statement:</b><br/>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p> <p><i>3LS9 Step 1: Formal written subtraction with no regrouping (up to 3-digit numbers)</i></p>   |          |          |      |          |      |      |  |  |  |  |  |  |
|------------------------------------|--|----------|----------|------|----------|------|------|--|--|--|--|--|--|
| <b>Concrete</b>                    | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Hundreds</th> <th style="text-align: center; padding: 5px;">Tens</th> <th style="text-align: center; padding: 5px;">Ones</th> <th style="text-align: center; padding: 5px;">Hundreds</th> <th style="text-align: center; padding: 5px;">Tens</th> <th style="text-align: center; padding: 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;"> </td><td style="text-align: center; padding: 5px;"> </td><td style="text-align: center; padding: 5px;"> </td><td style="text-align: center; padding: 5px;"></td><td style="text-align: center; padding: 5px;"></td><td style="text-align: center; padding: 5px;"></td></tr> </tbody> </table> | Hundreds | Tens     | Ones | Hundreds | Tens | Ones |  |  |  |  |  |  |
| Hundreds                           | Tens   | Ones     | Hundreds | Tens | Ones     |      |      |  |  |  |  |  |  |
|                                    |  |          |          |      |          |      |      |  |  |  |  |  |  |
| <b>Pictorial</b>                   | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Hundreds</th> <th style="text-align: center; padding: 5px;">Tens</th> <th style="text-align: center; padding: 5px;">Ones</th> <th style="text-align: center; padding: 5px;">Hundreds</th> <th style="text-align: center; padding: 5px;">Tens</th> <th style="text-align: center; padding: 5px;">Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;"> </td><td style="text-align: center; padding: 5px;"> </td><td style="text-align: center; padding: 5px;"> </td><td style="text-align: center; padding: 5px;"></td><td style="text-align: center; padding: 5px;"></td><td style="text-align: center; padding: 5px;"></td></tr> </tbody> </table> | Hundreds | Tens     | Ones | Hundreds | Tens | Ones |  |  |  |  |  |  |
| Hundreds                           | Tens   | Ones     | Hundreds | Tens | Ones     |      |      |  |  |  |  |  |  |
|                                    |  |          |          |      |          |      |      |  |  |  |  |  |  |
| <b>Abstract - Written symbolic</b> | $  \begin{array}{r}  345 \\  - 124 \\  \hline  221  \end{array}  $   |          |          |      |          |      |      |  |  |  |  |  |  |
| <b>Abstract - Speaking frame</b>   | <p>... ones take away ... ones leaves ... ones.<br/>     ... tens take away ... tens leaves ... tens.<br/>     ... hundreds take away ... hundreds leaves ... hundreds.</p> <p>So, ... – ... is equal to ... hundreds, ... tens and ... ones, which is ...</p>   |          |          |      |          |      |      |  |  |  |  |  |  |

| Year 3 | NC Statement:<br>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction | 3LSS9 Step 2: Formal/written subtraction – regrouping tens into ones only (up to 3-digit numbers) | Concrete | Pictorial | Abstract - Written symbolic  | Notes:  |
|--------|--|---|----------|-----------|--|---|
|        |  |   |          | <br>      | $  \begin{array}{r}  7810 \\  - 24 \\  \hline  56  \end{array}  $ $80 - 24 = 56$ | <p>It is important that pupils understand that 80 has been regrouped into 70 and 10. If pupils struggle with the compact notation refer to 2LS17 Step 5 for the expanded method.</p> <p><b>Speaking frame note:</b><br/>     "I can see that there aren't enough ones for me to take away ... ones without regrouping.<br/>     Regroup one ten into ten ones.<br/>     There are now ... tens and ... ones.<br/>     ... ones take away ... ones leaves ... ones.<br/>     ... tens take away ... tens leaves ... tens.<br/>     So, ... – ... is equal to ... tens and ... ones, which is ... ."   </p> |

| Year 3   | NC Statement:   |   |  |
|--|---|---|--|
|  | Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction   |   |  |
| 3LS9 Step 3: Formal written subtraction – regrouping hundreds into tens only (up to 3-digit numbers) | <p><b>Concrete</b></p> <p><b>Pictorial</b></p> <p><b>Abstract - Written symbolic</b></p> $  \begin{array}{r}  2\cancel{3} \ 1\ 2 \ 3 \\  - 1 \ 4 \ 1 \\  \hline  1 \ 8 \ 2  \end{array}  $ <p><b>323 – 141 = 182</b></p>  |   |  |
|  | <p><b>Abstract - Speaking frame</b></p> <p>... ones take away ... ones leaves ... ones.<br/>I can see that there aren't enough tens for me to take away ... tens without regrouping.</p> <p>Regroup one hundred into ten hundreds.<br/>There are now ... hundreds and ... tens.<br/>... tens take away ... tens leaves ... tens.<br/>... hundreds take away ... hundreds leaves ... hundreds<br/>So, ... – ... is equal to ... hundreds, ... tens and ... ones, which is ....</p> | <p><b>Notes:</b></p> <p>It is important that pupils start to identify where regrouping is necessary.<br/>Ensure that pupils are confident that the minuend may have been regrouped but it is still of equal value prior to subtraction.</p> |  |

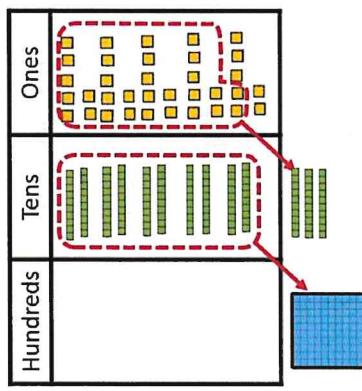
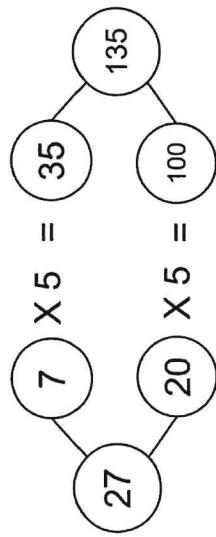
| Year 3  |           | Subtraction   |   |           |                             |  |  |  |  |
|---|-----------|---|---|-----------|-----------------------------|--|--|--|--|
| <b>NC Statement:</b><br>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction |           |   |   |           |                             |  |  |  |  |
|   |           | <p><i>3LS9 Step 4: Formal written subtraction - regrouping hundreds and tens (up to 3-digit numbers)</i></p> <table border="1"> <thead> <tr> <th>Concrete</th> <th>Pictorial</th> <th>Abstract - Written symbolic</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> <math display="block">  \begin{array}{r}  3 \cancel{4} \quad 9 \quad 1 \cancel{4} \\  - \quad 2 \quad 2 \quad 6 \\  \hline  1 \quad 7 \quad 8  \end{array}  </math> <p><b>404 – 226 = 178</b></p> </td> </tr> </tbody> </table> | Concrete  | Pictorial | Abstract - Written symbolic |  |  | $  \begin{array}{r}  3 \cancel{4} \quad 9 \quad 1 \cancel{4} \\  - \quad 2 \quad 2 \quad 6 \\  \hline  1 \quad 7 \quad 8  \end{array}  $ <p><b>404 – 226 = 178</b></p> |  |
| Concrete  | Pictorial | Abstract - Written symbolic   |   |           |                             |  |  |  |  |
|   |           | $  \begin{array}{r}  3 \cancel{4} \quad 9 \quad 1 \cancel{4} \\  - \quad 2 \quad 2 \quad 6 \\  \hline  1 \quad 7 \quad 8  \end{array}  $ <p><b>404 – 226 = 178</b></p>  |   |           |                             |  |  |  |  |
|   |           | <p><b>Abstract - Speaking frame</b></p> <p>I will need to regroup...</p> <ul style="list-style-type: none"> <li>• one hundred into ten tens. I now have ... hundreds and ... tens.</li> <li>• one ten into ten ones. I now have ... tens and ... ones.</li> </ul>   | <p><b>Notes:</b></p> <p><b>Speaking frame hint:</b> This is not a complete speaking frame. It is structured to support pupils with the language of regroup only.</p> <p>Once pupils have fully understood and rehearsed regrouping within formal subtraction, this learning continues to be rehearsed and applied throughout Years 4, 5 and 6, including to multi-digit, decimal numbers, money and measures.</p> |           |                             |  |  |  |  |

| <b>Year 3</b>  | <b>NC Statement:</b><br>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods | <p><i>3LS26 Step 3: Introducing short multiplication with no regrouping</i></p> <table border="1"> <thead> <tr> <th>Concrete</th><th>Pictorial - Jottings</th><th>Abstract - Written symbolic</th><th>Notes:</th></tr> </thead> <tbody> <tr> <td> <table border="1"> <thead> <tr> <th>Tens</th><th>Ones</th></tr> </thead> <tbody> <tr> <td></td><td></td></tr> </tbody> </table> </td><td> </td><td> <math display="block">  \begin{array}{r}  1 &amp; 2 \\  \times &amp; 3 \\  \hline  3 &amp; 6  \end{array}  </math> <br/> <math display="block">12 \times 3 = 36</math> </td><td> <b>Speaking frame note:</b><br/> "3 groups of 2 ones is 6 ones. 3 groups of 1 ten is 3 tens. 3 tens added 6 ones is 36.<br/> The product of 12 and 3 is 36." </td></tr> </tbody> </table> |        | Concrete | Pictorial - Jottings | Abstract - Written symbolic   | Notes:   | <table border="1"> <thead> <tr> <th>Tens</th><th>Ones</th></tr> </thead> <tbody> <tr> <td></td><td></td></tr> </tbody> </table> | Tens | Ones |  |  |  | $  \begin{array}{r}  1 & 2 \\  \times & 3 \\  \hline  3 & 6  \end{array}  $<br>$12 \times 3 = 36$ | <b>Speaking frame note:</b><br>"3 groups of 2 ones is 6 ones. 3 groups of 1 ten is 3 tens. 3 tens added 6 ones is 36.<br>The product of 12 and 3 is 36." |
|--|---|--|--------|----------|----------------------|---|--|---|------|------|--|--|--|---|--|
| Concrete   | Pictorial - Jottings  | Abstract - Written symbolic  | Notes: |          |                      |   |  |   |      |      |  |  |  |   |  |
| <table border="1"> <thead> <tr> <th>Tens</th><th>Ones</th></tr> </thead> <tbody> <tr> <td></td><td></td></tr> </tbody> </table>  | Tens  | Ones   |        |          |                      | $  \begin{array}{r}  1 & 2 \\  \times & 3 \\  \hline  3 & 6  \end{array}  $<br>$12 \times 3 = 36$ | <b>Speaking frame note:</b><br>"3 groups of 2 ones is 6 ones. 3 groups of 1 ten is 3 tens. 3 tens added 6 ones is 36.<br>The product of 12 and 3 is 36." |   |      |      |  |  |  |   |  |
| Tens   | Ones  |  |        |          |                      |   |  |   |      |      |  |  |  |   |  |
|  |   |  |        |          |                      |   |  |   |      |      |  |  |  |   |  |
| <p><b>Abstract - Speaking frame</b></p> <ul style="list-style-type: none"> <li>... groups of ... ones is ... ones.</li> <li>... groups of ... tens is ... tens.</li> <li>... tens added to ... ones is ... .</li> <li>The product of ... and ... is ... .</li> </ul> |   |  |        |          |                      |   |  |   |      |      |  |  |  |   |  |

| Year 3  |  |  |   |
|---|--|--|---|
| 3LS26 Step 4: Short multiplication with regrouping of ones into tens only           |  |  |   |
| Concrete  | Pictorial - Jottings   | Abstract - Written symbolic  | Notes:  |
|  |  | $  \begin{array}{r}  2 & 4 \\  \times & 3 \\  \hline  7 & 2  \end{array}  $ <p style="background-color: #ffccbc; padding: 5px; display: inline-block;"><math>24 \times 3 = 72</math></p> | <p><b>Notes:</b></p> <p>Pupils have already met the distributive law (3LS18) and rehearsed multiplying by ten (3LS25).</p> <p>The focus of this step is to support pupils in making the connection between informal distributive approach and the formal layout.</p> <p><b>Speaking frame note:</b><br/>     "3 groups of 4 ones is 12 ones. I can regroup the 12 ones into 1 ten and 2 ones. 3 groups of 2 tens is 6 tens. 1 ten added to 6 tens is 7 tens. The product of <math>24 \times 3</math> is 72."</p> <p>Pupils should be encouraged to consider whether italicised language in the speaking frame is required in the calculation.</p> |

**NC Statement:**

Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods

**3LS26 Step 5: Short multiplication with regrouping of tens and ones****Concrete****Pictorial - Jottings****Abstract - Written symbolic**

$$\begin{array}{r}
 27 \\
 \times 5 \\
 \hline
 135
 \end{array}$$

$$27 \times 5 = 135$$

**Abstract - Speaking frame**

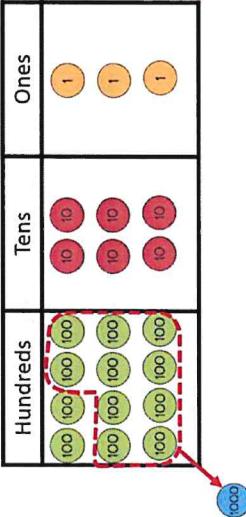
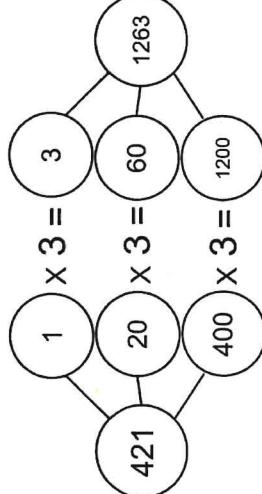
- ... groups of ... ones is ... ones.
- I can regroup the ... ones into ... ten(s) and ... one(s).
- ... groups of ... tens is ... tens.
- ... ten(s) added to ... ten(s) is ...
- I can regroup the ... tens into ... hundred(s) and ... ten(s)
- The product of ... and ... is ... .

**Notes:**

At this stage, the pictorial representation is being used as a checking point to ensure pupils answer accurately. This allows focused attention on understanding the abstract recording.

**Speaking frame note:**

"5 groups of 7 ones is 35 ones. I can regroup the 35 ones into 3 tens and 5 ones. 5 groups of 2 tens is 10 tens. 3 tens added to 10 tens is 13 tens. I can regroup the 13 tens into 1 hundred and 3 tens. The product of 27 x 5 is 135."

|               |   |  |   |  |
|---------------|---|--|---|--|
| <b>Year 4</b> | <b>NC Statement:</b><br>Multiply 2-digit and 3-digit numbers by a one-digit number using formal written layout (short multiplication) |  |   |  |
|               | <i>4LS24 Step 5: Formal written multiplication with regrouping which generates a new column</i>                                       | <b>Concrete</b>  | <b>Pictorial - Jottings</b>   | <b>Abstract - Written symbolic</b>   |
|               |    |  |  | <p><b>Notes:</b><br/>At this stage, the pictorial representation is being used as a checking point to ensure that pupils answer accurately. This allows focused attention on understanding the abstract recording.</p> <p><i>Pupils should be encouraged to consider whether the italicised language in the speaking frame is required in the calculation.</i></p> |

**NC Statement:**

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

**5LS11 Step 2: Expanded vertical multiplication 2-digit by 2-digit****Concrete**

|          |    |   |   |
|----------|----|---|---|
| $\times$ | 30 | 2 |   |
|          |    |   |    |
| $\times$ | 30 | 2 | <br><br><br><br><br><br><br><br> |
| 10       |    |   | <br>  |

**Pictorial - Jottings**

|     |            |           |       |
|-----|------------|-----------|-------|
| $X$ | 30         | 2         |       |
| 10  | <b>300</b> | <b>20</b> | = 320 |
| 4   | <b>120</b> | <b>8</b>  | = 128 |

**Abstract - Written symbolic**

$$\begin{array}{r} 3 \ 2 \\ \times 1 \ 4 \\ \hline 8 \\ 1 \ 2 \ 0 \\ 2 \ 0 \\ 3 \ 0 \ 0 \\ \hline 4 \ 4 \ 8 \end{array}$$

$$32 \times 14 = 448$$

**Abstract - Speaking frame**

First, I need to consider the **ones** in the multiplier.  
 ... groups of ... ones is **ones**.  
 ... groups of ... tens is **tens**. (Do I need to regroup?)  
 Then, tens in the multiplier.  
 ... groups of ... ones is **ones**. (Do I need to regroup?)  
 ... groups of ... tens is **tens**. (Do I need to regroup?)  
 The total of all the partial products is ....  
 The product of ... and ... is ....

**Notes:**

This is a transitional method towards long multiplication. Using the grid supports pupils in their thinking about multiplying by powers of ten and place value. Secure understanding of both of these concepts allow pupils to move to long multiplication more successfully.

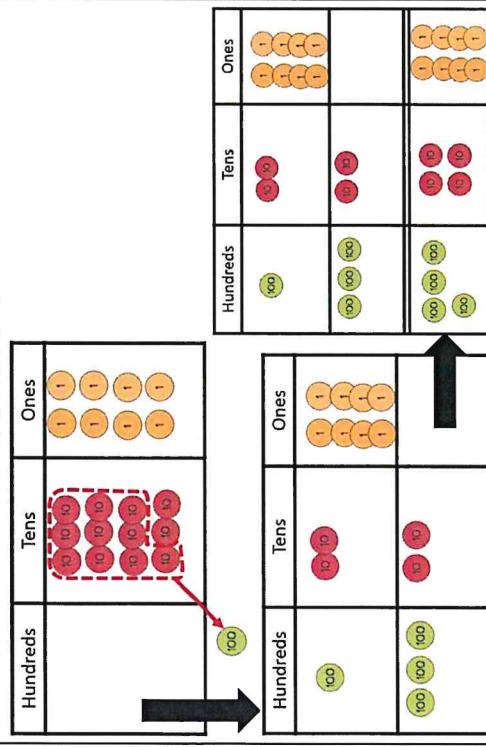
**Speaking frame hint:** linking to what we know and correct place value. For example, 10 groups of 3 tens is 30 tens. This can be regrouped to 3 hundreds.

**Year 5**

# Multiplication

**NC Statement:**

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

**5LS11 Step 3: Long multiplication 2-digit by 2-digit with simple regrouping****Concrete****Pictorial - Jottings**

| X                    | 30  | 2  |
|----------------------|-----|----|
| 10                   | 300 | 20 |
| 4                    | 120 | 8  |
| $= 320$              |     |    |
| $= 128$              |     |    |
| $32 \times 14 = 448$ |     |    |

**Multiplication****Abstract - Written symbolic**

Speaking frame hint: linking to what we know and correct place value.

For example, 10 groups of 3 tens is 30 tens (linking to known fact  $10 \times 3$ ). This can be regrouped to 3 hundreds.

**Notes:**

Speaking frame hint: linking to what we know and correct place value.

For example, 10 groups of 3 tens is 30 tens (linking to known fact  $10 \times 3$ ). This can be regrouped to 3 hundreds.

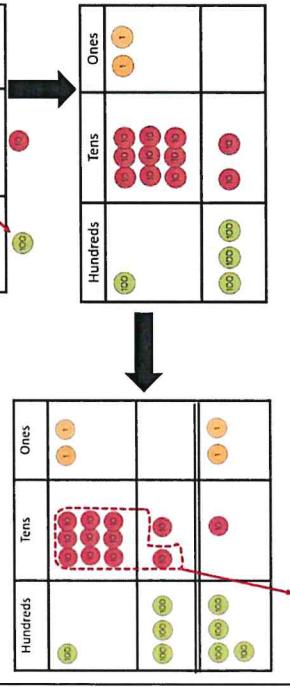
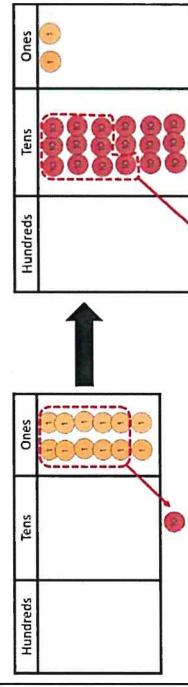
**Abstract - Speaking frame**

First, I need to consider the ones in the multiplier.  
... groups of ... ones is ones. (Do I need to regroup?)  
... groups of ... tens is tens. (Do I need to regroup?)  
Then, considering tens in the multiplier.  
... groups of ... ones is ones. (Do I need to regroup?)  
... groups of ... tens is tens. (Do I need to regroup?)  
The total of all the partial products is ....  
The product of ... and ... is ....

**Year 5****NC Statement:**

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

**5LS11 Step 3: Long multiplication 2-digit by 2-digit, focusing on regroup in first partial product**

**Concrete****Pictorial**

| x  | 30  | 2        |
|----|-----|----------|
| 10 | 300 | 20 = 320 |
| 6  | 180 | 12 = 192 |

**Abstract - Written symbolic**

$$\begin{array}{r} \textcolor{green}{1} \ 2 \\ \times \ 1 \ 6 \\ \hline \textcolor{red}{1} \ 9 \ 2 \end{array}$$

$$32 \times 16 = 512$$

**Abstract - Speaking frame**

First, I need to consider the ones in the multiplier.  
 ... groups of ... ones is ... ones. (Do I need to regroup?)  
 ... groups of ... tens is ... tens. (Any regroups to add? Do I need to regroup?)  
 Then, considering tens in the multiplier.  
 ... groups of ... ones is ... ones. (Do I need to regroup?)  
 ... groups of ... tens is ... tens. (Do I need to regroup?)  
 The total of all the partial products is ... .  
 The product of ... and ... is ... .

**Notes:**

**Speaking frame hint:** linking to what we know and correct place value.

For example, 6 groups of 3 tens is 18 tens (linking to known fact  $6 \times 3 = 18$ ). This can be regrouped to 1 hundred and 8 tens.

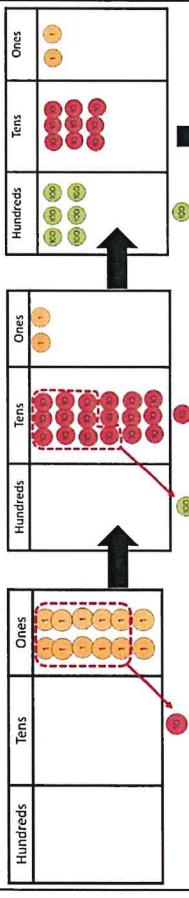
## Year 5

### NC Statement:

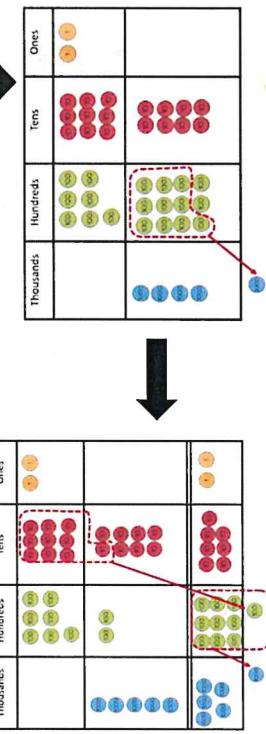
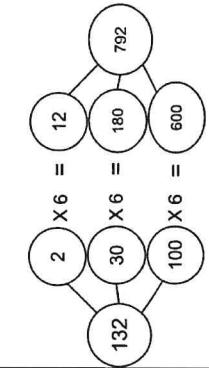
Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers

#### 5LS11 Step 3: Long multiplication 2-digit by 2-digit regrouping in first and second stage

### Concrete



### Pictorial - Jottings



### Abstract - Written symbolic

$$\begin{array}{r} \overset{1}{\overset{1}{1}} \ 3 \ 2 \\ \times 4 \ 6 \\ \hline 7 \ 9 \ 2 \end{array}$$

$$\begin{array}{r} 5 \ 2 \ 8 \ 0 \\ \hline 6 \ 0 \ 7 \ 2 \\ \hline 1 \ 1 \end{array}$$

$$132 \times 46 = 6,072$$

### Abstract - Speaking frame

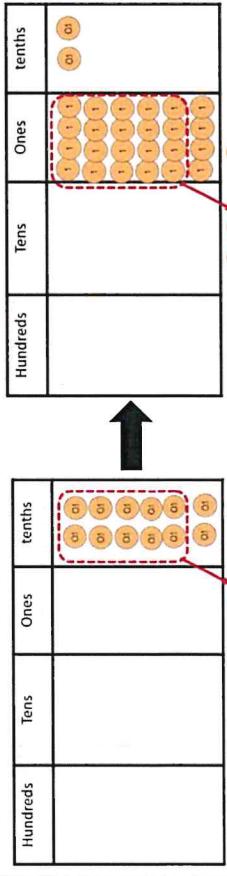
First, I need to consider the ones in the multiplier.  
 ... groups of ... ones is ... ones. (Do I need to regroup?)  
 ... groups of ... tens is ... tens. (Any regroups to add? Do I need to regroup?)  
 Then, considering tens in the multiplier.  
 ... groups of ... ones is ... ones. (Do I need to regroup?)  
 ... groups of ... tens is ... tens. (Any regroups to add? Do I need to regroup?)  
 The total of all the partial products is ... .  
 The product of ... and ... is ....

### Notes:

**Speaking frame hint:** linking to what we know and correct place value.  
 For example, 6 groups of 3 tens is 18 tens (linking to known fact  $6 \times 3 = 18$ ). This can be regrouped to 1 hundred and 8 tens.

**NC Statement:**

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

**Year 6****6LS12 Step 5: Formal written multiplication involving numbers with up to 2 decimal places multiplied by a 1-digit number****Concrete****Pictorial - Jottings**

Jottings: multiples of tricky multipliers

|    |
|----|
| 6  |
| 12 |
| 18 |
| 24 |
| 30 |
| 36 |
| 42 |
| 48 |
| 54 |
| 60 |
| 66 |
| 72 |

**Abstract - Written symbolic**

$$\begin{array}{r}
 & 2 & 1 \\
 & 3 & 4 . & 2 \\
 \times & & 6 \\
 \hline
 205 . 2
 \end{array}$$

$$34.2 \times 6 = 205.2$$

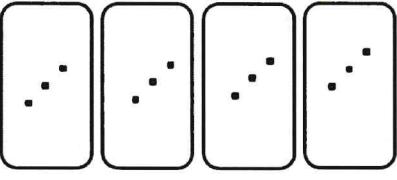
**Abstract - Speaking frame**

- ... groups of ... tenths is ... tenths. (Do I need to regroup?)
- ... groups of ... ones is ... ones. (Any regroups to add? Do I need to regroup?)
- ... groups of ... tens is ... tens. (Any regroups to add? Do I need to regroup?)
- The product of ... and ... is ... .

**Notes:**

Speaking frame hint: linking to what we know and correct place value.

For example, 6 groups of 3 tens is 18 tens (linking to known fact  $6 \times 3 = 18$ ). This can be regrouped to 1 hundred and 8 tens.

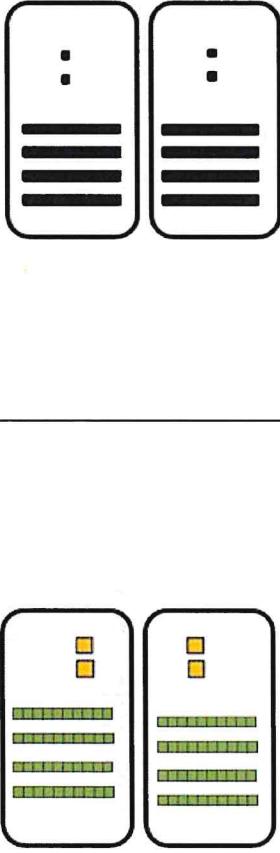
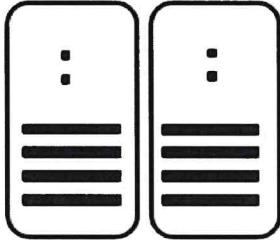
|                                    |   |
|------------------------------------|---|
| <b>Year 3</b>                      | <b>NC Statement:</b><br>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods |
|                                    | <b>3LS30 Step 2: Introducing the long division method (sharing ones)</b>  |
| <b>Concrete</b>                    | <p><b>Pictorial</b></p>    |
| <b>Abstract - Written symbolic</b> | <p><b>Abstract - Written symbolic</b></p> $\begin{array}{r} 3 \\ 4 \overline{)13} \\ \underline{-12} \\ \hline 1 \end{array}$ <div style="border: 1px solid red; padding: 5px; display: inline-block;"> <math>13 \div 4 = 3 \text{ r } 1</math> </div>              |

**Abstract - Speaking frame**

I am sharing ... ones into ... equal groups.  
 There are ... ones in each group.  
 I have ... one(s) remaining.  
 The quotient is ... with ... remainders.

**Notes:**

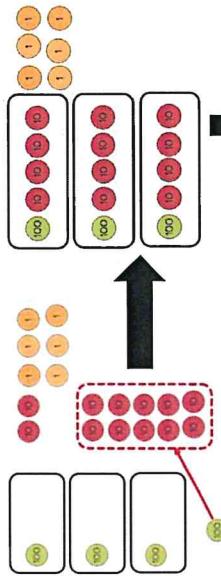
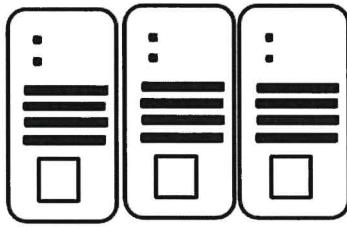
Pupils are introduced to the long division method for the first time in this sequence. Short division will not be introduced until pupils have understood all of the stages in this expanded form. In the calculation  $96 \div 4$ , for example, pupils often struggle to understand that 1 ten will be regrouped after 8 tens have been used in the 4 groups. This is hidden in short division but recorded in long division.

|               |   |   |  |   |
|---------------|---|---|--|---|
| <b>Year 3</b> | <b>NC Statement:</b><br>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods |   |  |   |
|               | <b>3LS30 Step 3: Long division of tens and ones with no regrouping (sharing structure)</b>  |   |  |   |
|               | <b>Concrete</b>   | <b>Pictorial</b>  | <b>Abstract - Written symbolic</b>   |   |
|               |    |  | $\begin{array}{r} 4 & 2 \\ 2 \overline{)8} & 4 \\ - & 8 \\ \hline & 0 \end{array}$<br><b>84 ÷ 2 = 42</b> | <p><b>Notes:</b></p> <p>This stage is to support pupils' understanding of the abstract notation. They learn to record how many tens are in each group, if there are any tens remaining and what the arrow means.</p> <p><b>Speaking frame note:</b> "First, I am sharing ... tens into ... equal groups.<br/>There are ... tens in each group.<br/>I have ... ten(s) remaining.<br/>Then, I am sharing ... ones into ... equal groups.<br/>There are ... ones in each group.<br/>I have ... one(s) remaining.<br/>The quotient is ... with ... remainders."</p> |

| Division |   |  |   |
|----------|---|--|---|
| Year 3   | NC Statement:   | 3LS30 Step 4: Long division of tens and ones with regrouping (sharing structure)   |   |
|          | Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods | <p><b>Concrete</b></p> <p><b>Pictorial</b></p> <p><b>Abstract - Written symbolic</b></p> $\begin{array}{r} 3 & 7 \\ 2 \overline{)7 & 4} \\ - 6 \\ \hline 1 & 4 \\ - 1 & 4 \\ \hline 0 \end{array}$   |   |
|          |   | <p><b>Abstract - Speaking frame</b></p> <p>First, I am sharing ... tens into ... equal groups.<br/>     There are ... tens in each group.<br/>     I have ... ten(s) remaining.<br/>     I need to regroup the remaining ... ten(s) into ... ones.<br/>     I now have ... ones in total.<br/>     Then, I am sharing ... ones into ... equal groups.<br/>     There are ... ones in each group.<br/>     I have ... one(s) remaining.<br/>     The quotient is ... with ... remainders.</p> | <p><b>Notes:</b></p> <p>This is a crucial stage as it demonstrates the regrouping of the remaining tens for ones and how this is recorded abstractly.</p> <p><b>Speaking frame note:</b> "... I have 1 ten remaining. I need to regroup the remaining 1 ten into 10 ones. I now have 14 ones in total..."</p> |

**NC Statement:**

Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers (non-statutory guidance)

**Year 4****4LS25 Step 2: Long division with regrouping hundreds into tens (sharing structure)****Concrete****Pictorial****Abstract - Written symbolic**

$$\begin{array}{r} 1 & 4 & 2 \\ 3 \overline{) 4 & 2 & 6} \\ - 3 \\ \hline 1 & 2 \\ - 1 & 2 \\ \hline 0 & 6 \\ \hline & 6 \\ \hline 0 \end{array}$$

$$426 \div 3 = 142$$

**Abstract - Speaking frame**

First, I am sharing ... hundreds into ... equal groups.  
There are ... hundreds in each group.  
I have ... hundred(s) remaining.  
I need to regroup the remaining ... hundreds into ... tens.  
I now have ... tens in total.  
Next, I am sharing ... tens into .. equal groups.

**Notes:**

Pupils revisit long division with no regrouping again 4LS25 step 1. This is to ensure that they understand the abstract recording of long division.

**Speaking frame note:** This stage is an extension to the previous speaking frame – focusing on the hundreds regroup.

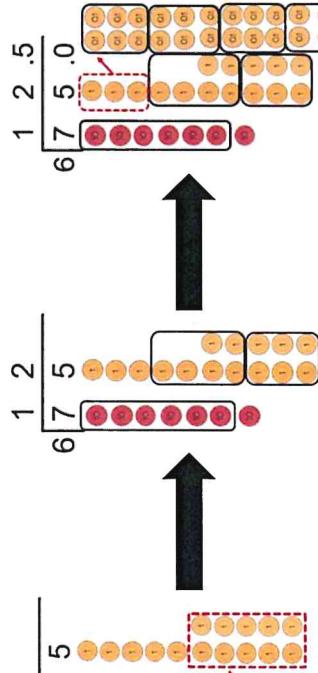
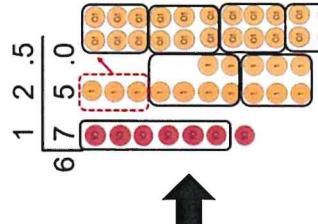
| <p><b>Year 4</b></p> <p><b>NC Statement:</b><br/>Pupils practise to become fluent in the formal written method of short multiplication and short division with exact answers (non-statutory guidance)</p>   | <p><b>4LS25 Step 4: Introducing formal short division (sharing structure)</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Concrete</th><th style="text-align: center;">Pictorial</th><th style="text-align: center;">Abstract - Written symbolic</th><th style="text-align: center;">Notes:</th></tr> </thead> <tbody> <tr> <td style="text-align: center;"> </td><td style="text-align: center;"> </td><td style="text-align: center;"> </td><td style="text-align: center;"> <p><b>Notes:</b></p> <p>In this stage, pupils learn that the thinking processes for long and short division are the same – it is only the abstract written that is different. It is important that pupils are able to link this to the long division format and can explain the compaction.</p> <p><b>Speaking frame note:</b> This stage is an extension to the previous speaking frame – focusing on the hundreds regroup.</p> </td></tr> <tr> <td colspan="3" style="text-align: center;"> <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 10px; width: fit-content; margin: auto;"> First, I am sharing ... hundreds into ... equal groups.<br/> There are ... hundreds in each group.<br/> I have ... hundred(s) remaining.<br/> I need to regroup the remaining ... hundreds into ... tens.<br/> I now have ... tens in total.<br/> Next, I am sharing ... tens into ... equal groups. </div> </td><td></td></tr> </tbody> </table> |                             | Concrete   | Pictorial | Abstract - Written symbolic | Notes: |  |  |  | <p><b>Notes:</b></p> <p>In this stage, pupils learn that the thinking processes for long and short division are the same – it is only the abstract written that is different. It is important that pupils are able to link this to the long division format and can explain the compaction.</p> <p><b>Speaking frame note:</b> This stage is an extension to the previous speaking frame – focusing on the hundreds regroup.</p> | <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 10px; width: fit-content; margin: auto;"> First, I am sharing ... hundreds into ... equal groups.<br/> There are ... hundreds in each group.<br/> I have ... hundred(s) remaining.<br/> I need to regroup the remaining ... hundreds into ... tens.<br/> I now have ... tens in total.<br/> Next, I am sharing ... tens into ... equal groups. </div> |  |  |  |
|---|--|-----------------------------|--|-----------|-----------------------------|--------|--|--|--|--|---|--|--|--|
| Concrete  | Pictorial  | Abstract - Written symbolic | Notes:   |           |                             |        |  |  |  |  |   |  |  |  |
|   |  |                             | <p><b>Notes:</b></p> <p>In this stage, pupils learn that the thinking processes for long and short division are the same – it is only the abstract written that is different. It is important that pupils are able to link this to the long division format and can explain the compaction.</p> <p><b>Speaking frame note:</b> This stage is an extension to the previous speaking frame – focusing on the hundreds regroup.</p> |           |                             |        |  |  |  |  |   |  |  |  |
| <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 10px; width: fit-content; margin: auto;"> First, I am sharing ... hundreds into ... equal groups.<br/> There are ... hundreds in each group.<br/> I have ... hundred(s) remaining.<br/> I need to regroup the remaining ... hundreds into ... tens.<br/> I now have ... tens in total.<br/> Next, I am sharing ... tens into ... equal groups. </div> |  |                             |  |           |                             |        |  |  |  |  |   |  |  |  |

| Year 5  | NC Statement:   |
|---|---|
| <i>5LS12 Step 2: Introducing formal short division regroup from tens to ones (grouping structure)</i> |   |
| Concrete  | Pictorial - Jottings  |
|   |   |
| Abstract - Speaking frame   | <p>I want to know how many groups of ... are in ... .</p> <p>How many groups of ... tens are in ... tens without regrouping?</p> <p>I can make ... group(s) of ... tens. There is/are ... ten(s) remaining.</p> <p>I need to regroup the ... tens into ... <b>ones</b>.</p> <p>I now have ... ones.</p> <p>How many groups of ... ones are in ... ones, without regrouping?</p> <p>I can make ... group(s) of ... ones. There is/are ... one(s) remaining.</p> <p>There are ... groups of ... in ... with ... remainders.</p> |

| Notes:   |
|--|
| Pupils are encouraged to progress to a grouping model of division. This is in preparation for 2-digit divisors and understanding fractions expressed as part of the quotient.  |
| Pupils should explore with simple division calculations to ensure that they understand the shift in structure.   |
| <b>Speaking frame note:</b> In this example, the speaking frame would be completed like this:<br>"How many groups of 3 tens are <i>in</i> 4 tens, <i>without regrouping</i> ?" |
| This is to ensure that accurate place value and magnitude is maintained.   |

| Year 5   | NC Statement:   |
|--|---|
|  | 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  |
| 5LS12 Step 3: Short division for numbers up to 4-digits (grouping structure) |   |
| Concrete   | <p>Pictorial - Jottings</p>   |
| Abstract   | <p>Abstract - Written symbolic</p> $\begin{array}{r} 1 \ 4 \ 6 \\ 3 \overline{)4 \ 3 \ 8} \\ \quad 3 \quad 8 \\ \quad \quad 8 \end{array}$ <p><math>438 \div 3 = 146</math></p>   |
| Abstract - Speaking frame  | <p>I want to know how many groups of ... are in ....<br/>How many groups of ... hundreds are in ... hundreds, without regrouping?<br/>I can make ... group(s) of ... hundreds. There is/are ... hundred(s) remaining.<br/>I need to regroup the ... hundreds into ... tens.</p> |

| Division |  |                             |           |                             |  |  |  |
|----------|--|-----------------------------|-----------|-----------------------------|--|--|--|
| Year 5   | NC Statement:  |                             |           |                             |  |  |  |
|          | 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   |                             |           |                             |  |  |  |
|          | <i>5LS12 Step 4: Short division (grouping structure) - expressing quotients with fractions</i>   |                             |           |                             |  |  |  |
|          | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">Concrete</th> <th style="text-align: center; padding: 5px;">Pictorial</th> <th style="text-align: center; padding: 5px;">Abstract - Written symbolic</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 10px;"> </td><td style="text-align: center; padding: 10px;"> </td><td style="text-align: center; padding: 10px;"> </td></tr> </tbody> </table> | Concrete                    | Pictorial | Abstract - Written symbolic |  |  |  |
| Concrete | Pictorial  | Abstract - Written symbolic |           |                             |  |  |  |
|          |  |                             |           |                             |  |  |  |
|          | <p><b>Abstract - Speaking frame</b></p> <div style="border: 2px solid red; padding: 10px; margin-top: 10px;"> <p>I have a remainder of ... .</p> <p>This is ... (remainder) out of ... (divisor) which I need for another group.</p> <p>This can be written as a fraction — .</p> <p>This can be simplified to — .</p> </div>  |                             |           |                             |  |  |  |

| Year 5 | NC Statement:  | Division  |  |                             |    |    |    |    |    |    |    |    |    |  |
|--------|--|---|--|-----------------------------|----|----|----|----|----|----|----|----|----|--|
|        | 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   |   |  |                             |    |    |    |    |    |    |    |    |    |  |
|        | <i>5LS12 Step 5: Short division (grouping structure) - expressing quotients with decimals</i>  | Pictorial - Jottings  | Jottings: multiples of the divisor   | Abstract - Written symbolic |    |    |    |    |    |    |    |    |    |  |
|        |   |  | <table border="1"> <tr><td>6</td><td>12</td><td>18</td><td>24</td><td>30</td><td>36</td><td>42</td><td>48</td><td>54</td><td>60</td></tr> </table> | 6                           | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | $\begin{array}{r} 1 & 2 & .5 \\ 6 \sqrt{7} & 5.0 \\ \hline & 30 \\ & 30 \\ \hline & 0 \end{array}$ <p><b>75 ÷ 6 = 12.5</b></p> |
| 6      | 12   | 18  | 24   | 30                          | 36 | 42 | 48 | 54 | 60 |    |    |    |    |  |
|        | <b>Abstract - Speaking frame</b> <p>I have a remainder of ... .<br/>I need to regroup the ... ones into ... tenths.<br/>How many groups of ... tenths are in ... tenths, without regrouping?<br/>I can make ... group(s) of ... tenths.<br/><br/>There are ... groups of ... in ....</p> |   |  |                             |    |    |    |    |    |    |    |    |    |  |

**Notes:**

**Speaking frame note:** This is an extension to the previous speaking frame (5LS12 Step 2). In this example, the speaking frame would be completed like this:

"I have a remainder of 3.  
I need to regroup the 3 ones into 30 tenths.  
How many groups of 6 tenths are in 30 tenths, without regrouping?  
I can make 5 groups of 6 tenths.  
There are 12.5 groups of 6 in 75."

| Year 6   | NC Statement: | 6LS17 Step 2: Long division for numbers up to 4 digits |  |                                    |
|----------|---------------|--|--|------------------------------------|
| Concrete |               |  |  |                                    |
|          |               |  | <b>Pictorial - Jottings</b><br><i>Jottings: multiples of the divisor</i>   | <b>Abstract - Written symbolic</b> |
|          |               |  |  | $3016 \div 13 = 232$               |
|          |               |  | <b>Notes:</b> <p>The structure of long division was first introduced in 3LS30, then revisited and extended in both years 4 and 5. It was revised in Step 1 of this sequence. Jottings are used to scaffold to derived related division facts.</p> <p><b>Speaking frame note:</b> This is an extension to the previous speaking frame (5LS12 Step 2). In this example, the speaking frame would be completed like this:</p> <p>"How many groups of 13 thousands are in 3 thousand, without regrouping?" I can make zero groups of 13 thousand. There are 3 thousand remaining. I need to regroup the 3 thousands into 30 hundreds."</p> |                                    |
|          |               |  | <b>Abstract - Speaking frame</b> <ul style="list-style-type: none"> <li>I want to know how many groups of ... are in ... .</li> <li>How many groups of ... thousand are in ... thousand, without regrouping?</li> <li>I can make ... group(s) of ... thousand. There is/are ... thousand(s) remaining.</li> <li>I need to regroup the ... thousand(s) into ... hundreds.</li> </ul>  |                                    |

These additional examples show only jottings, completed speaking frames and abstract recording. This complexity of calculation should only be introduced to pupils once they are confident in the conceptual pathway and can explain the abstract recording with reference to the concrete and pictorial models.

## Additional Year 6 examples

| Additional Year 6 examples | Year 6 | NC Statement:   | 6LS17 Step 4: Long division for numbers up to 4 digits - expressing quotients with fractions   |
|----------------------------|--------|---|--|
|                            |        | <p><b>Pictorial - Jottings</b><br/>Jottings: multiples of the divisor</p> <p>15<br/>30<br/>45<br/>60<br/>75<br/>90<br/>105<br/>120<br/>135<br/>150</p> <p>I have a remainder of 9.<br/>This is 9 out of the 15 which I need for another group.<br/>This can be written as a fraction <math>\frac{9}{15}</math>.<br/>This can be simplified to <math>\frac{3}{5}</math>.<br/>There are <math>3\frac{3}{5}</math> in each of the 15 groups.</p> | <p><b>Abstract - Written symbolic</b></p> $  \begin{array}{r}  & & 3 \\  & 0 & 3 & 7 & 3 \\  15 & \overline{)5} & 6 & 4 \\  & - & 0 & 6 \\  & & 5 & \longrightarrow \\  & & - & 4 & 5 \\  & & & 1 & 4 \\  & & - & 1 & 0 & 5 \\  & & & & 9 \\  & & & \frac{9}{15} = \frac{3}{5}  \end{array}  $ <p><b>564 ÷ 15 = <math>37\frac{3}{5}</math></b></p> |

## Additional Year 6 examples

### Year 6

**NC Statement:**  
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

#### 6LS17 Step 5: Long division for numbers up to 4 digits - expressing quotients with decimals

##### Abstract speaking frame

##### Pictorial - Jottings

Jottings: multiples of the divisor

15      30      45      60      75      90      105      120      135      150

I have a remainder of 9.  
I need to regroup the 9 ones into 90 tenths.  
How many groups of 15 tenths are in 90 tenths, without regrouping?  
I can make 6 groups of 15 tenths.  
There is nothing remaining.  
There are 37.6 groups of 15 in 564.

##### Abstract - Written symbolic

$$\begin{array}{r}
 & 0 & 3 & 7 & .6 \\
 15 & \overline{)5} & 6 & 4 & .0 \\
 & - 0 & 6 & & \\
 & \hline
 & 5 & & \\
 & - 4 & 5 & & \\
 & \hline
 & 1 & 4 & & \\
 & - 1 & 0 & 5 & \\
 & \hline
 & 9 & 0 & & \\
 & - 9 & 0 & & \\
 & \hline
 & 0 & & &
 \end{array}$$

564 ÷ 15 = 37.6

|                                   |   |
|-----------------------------------|---|
| <b>Additional Year 6 examples</b> | <b>NC Statement:</b><br>Multiply multi-digit numbers of up to 4-digits by a two-digit whole number using the formal written method of long multiplication |
| <b>Year 6</b>                     |   |

**6LS12 Step 3: Long multiplication; up to 4-digit by 2-digit****Abstract speaking frame**

- First, I need to consider the ones in the multiplier.  
 7 groups of 6 ones is 42 ones.  
 I need to regroup into 4 tens and 2 ones.  
 7 groups of 3 tens is 21 tens.  
 I need to add the regrouped 4 tens. I now have 25 tens.  
 I need to regroup into 2 hundreds and 5 tens.  
 7 groups of 8 hundreds is 56 hundreds.  
 I need to add the regrouped 2 hundreds. I now have 58 hundreds. I can regroup this into 5 thousands and 8 hundreds.

- Then, considering the tens in the multiplier.  
 20 groups of 6 ones is 120 ones.  
 I need to regroup into 1 hundred and 2 tens.  
 20 groups of 3 tens is 6 hundreds.  
 I need to add the regrouped 1 hundred. I now have 7 hundreds.  
 20 groups of 8 hundred is 16 thousand. There are no regroups to add.  
 The total of the two partial products is 22, 572.  
 The product of 836 and 27 is 22, 572.

**Abstract speaking frame****Abstract - Written symbolic**

$$\begin{array}{r}
 & \overset{1}{\cancel{4}} \\
 & 8 \ 3 \ 6 \\
 \times & 2 \ 7 \\
 \hline
 & 5 \ 8 \ 5 \ 2 \\
 & \overset{1}{\cancel{6}} \ 7 \ 2 \ 0 \\
 \hline
 & 2 \ 2 \ 5 \ 7 \ 2
 \end{array}$$

$$836 \times 27 = 22,572$$

