



# Randlay Primary School and Nursery

## KS2 Multiplication and Division

### Concrete/Pictorial/Abstract

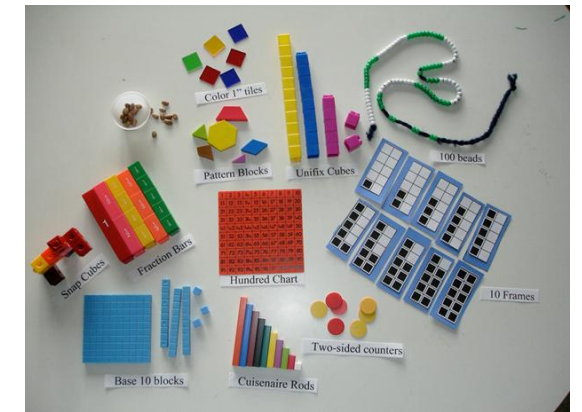
### Maths Calculation Policy

This policy has created using a wide range of external sources (NCETM, White Rose Maths Hub and Click4teaching). It is a working document and will be revised and amended as necessary. Many variations have been included to provide teachers with a range of tools to support pupils in their grasp of number and calculation. To ensure consistency for pupils, it is important that the mathematical language used in maths lessons reflects the vocabulary used throughout this policy.

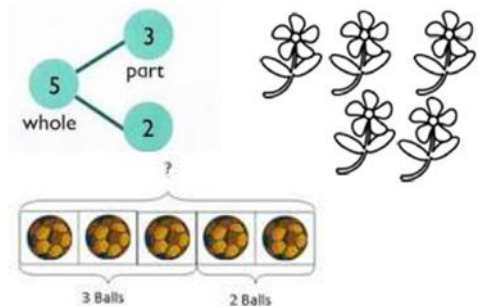
## Concrete

The first part of the CPA approach is Concrete, which is known as the 'doing' stage. children use concrete objects to model problems. The CPA approach brings concepts to life by allowing children to experience and handle physical (concrete) objects, unlike traditional maths teaching methods where teachers demonstrate how to solve a problem. With the CPA framework, every abstract concept is first introduced using physical, interactive concrete materials.

As part of the CPA approach, new concepts are introduced through the use of physical objects or practical equipment. These can be physically handled, enabling children to explore different mathematical concepts. These are sometimes referred to as maths manipulatives and can include ordinary household items such as straws or dice, or specific mathematical resources such as dienes or numicon.



## Pictorial



The second part of the CPA approach is pictorial, which is known as the 'seeing' stage. This is when visual representations of concrete objects are used to model problems. children are encouraged to make a mental connection between the physical object they have just handled and the abstract pictures, diagrams or models that represent the objects from the problem.

Building or drawing a model makes it easier for children to grasp difficult abstract concepts (for example, fractions). Once children are confident with a concept using concrete resources, they progress to drawing pictorial representations or quick sketches of the objects. By doing this, they are no longer manipulating the physical resources, but still benefit from the visual support the resources provide.

## Abstract

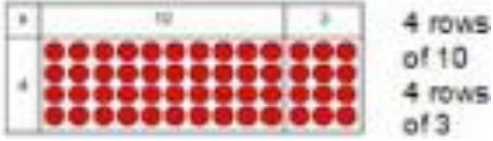
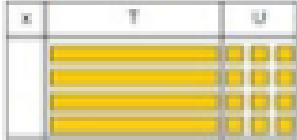
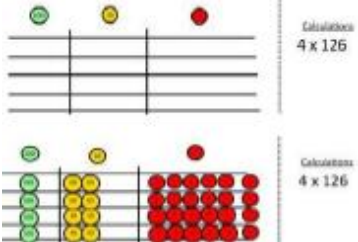
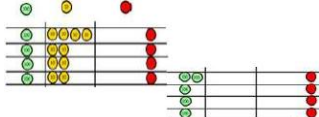
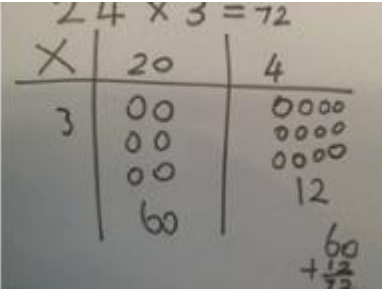
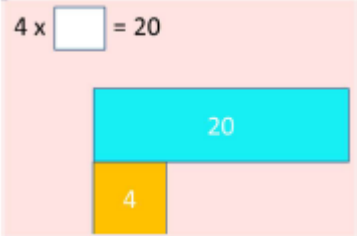
The final stage of the CPA approach is abstract, which is known as the 'symbolic' stage, where children use abstract symbols to model problems. children will not progress to this stage until they have demonstrated that they have a solid understanding of the concrete and pictorial stages of the problem. The abstract stage involves the teacher introducing abstract concepts (for example, mathematical symbols).

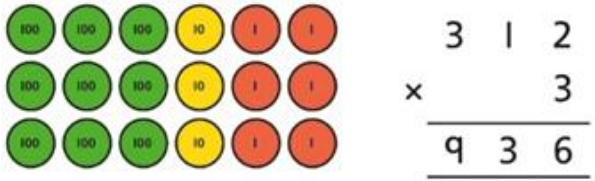
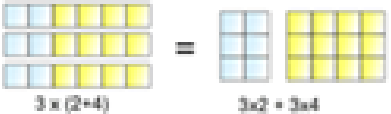
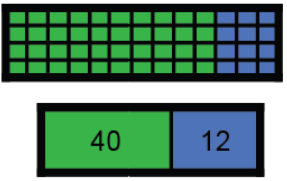
Once children have a secure understanding of the concept through the use of concrete resources and visual images, they are then able to move on to the abstract stage. Here, children are using abstract symbols to model problems - usually numerals. To be able to access this stage effectively, children need access to the previous two stages alongside it.

|   |   |   |   |   |
|---|---|---|---|---|
|   | 3 | 5 | 1 | 7 |
| + |   | 3 | 9 | 6 |
|   | 3 | 9 | 1 | 3 |

Concrete, pictorial, abstract (CPA) concepts should not be confused as differentiation for lower, middle, higher attaining children. CPA is an approach to be used with the whole class and teachers should promote each area as equally valid. Manipulatives in particular must not be presented as a resource to support the less confident or lower attaining pupils.

True mastery aims to develop all children's mathematical understanding at the same pace. As much as possible, children should be accessing the same learning. Differentiation should primarily be through support, scaffolding and deepening, not through task. Consistency in language is essential for pupils to understand the concepts presented in mathematics. If other, 'child-friendly' terminology is used, this must be alongside the current terminology recommended by the maths subject leader. Using this will support children with their examinations and throughout secondary school.

| Year 3 Multiplication                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                         | <b>Vocabulary:</b><br>lots of, groups of ×, times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition array row, column double, halve share, share equally one each, two each, three each...                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Instructional vocabulary:</b><br>carry on, continue repeat what comes next? predict describe the pattern, describe the rule, find, find all, find different, investigate choose, decide, collect                                                                                                                                                                                                     |
| Objective/Strategy                                                                                      | Concrete<br>"doing stage"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pictorial<br>"seeing stage"                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Abstract<br>"symbolic stage"                                                                                                                                                                                                                                                                                                                                                                            |
| <p>Grid method, progressing to the formal method</p> <p>Multiply 2 digit numbers by 1 digit numbers</p> | <p>Show the links with arrays to first introduce the grid method.</p>  <p>4 rows of 10<br/>4 rows of 3</p> <p>Move onto base ten to move towards a more compact method.</p>  <p>4 rows of 13</p> <p>Move on to place value counters to show how we are finding groups of a number. We are multiplying by 4 so we need 4 rows</p>  <p>Fill each row with 126.<br/>Add up each column, starting with the ones making any exchanges needed</p>  <p>Then you have your answer.</p> | <p>Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts or just use the circles in the different columns to show their thinking as shown below.</p>  <p>Bar model are used to explore missing numbers</p>  | <p>Start with multiplying by one digit numbers using the short multiplication method:</p> <p><b>Short multiplication</b></p> <p><b>Expanded</b></p> $\begin{array}{r} 23 \\ \times 8 \\ \hline 160 \end{array}$ <p><b>HT O</b></p> $\begin{array}{r} 23 \\ \times 8 \\ \hline 184 \end{array}$ <p><b>HT O</b></p> $\begin{array}{r} 23 \\ \times 8 \\ \hline 184 \end{array}$ <p>leading to compact</p> |
| Solve problems, including missing number problems, integer scaling problems,                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>Three times as high, eight times as long</p> <p>? × 5 = 20<br/>20 ÷ ? = 5</p> <p>3 hats and 4 coats, how many different outfits?</p>                                                                                                                                                                                                                                                                 |
| Known facts                                                                                             | Recall and use × and ÷ facts for the 3, 4 and 8 × tables                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                         |
| Essential Knowledge by the end of Year 3.                                                               | Review 2x, 5x and 10x                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Double 2 digit numbers                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                         | 4x table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3x table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                         | 8 x table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 6x table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 9 x table                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                         |

| Year 4 Multiplication                           |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                 | <b>Vocabulary:</b><br>lots of, groups of times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition array row, column double, halve, factor, multiple |                                                                                                                                                                                                                         | <b>Instructional vocabulary:</b><br>carry on, continue, repeat what comes next? predict describe the pattern, describe the rule, pattern, puzzle, calculate, calculation, mental calculation, method, jotting, answer right, correct, wrong what could we try next? how did you work it out? number sentence sign, operation, symbol, equation                                               |
| Objective/Strategy                              | Concrete<br>"doing stage"                                                                                                                                                                                                                                         | Pictorial<br>"seeing stage"                                                                                                                                                                                             | Abstract<br>"symbolic stage"                                                                                                                                                                                                                                                                                                                                                                 |
| Move to multiplying 3 digit numbers by 1 digit. | Use place value counters to create different multiplication for up to and including 3 digits x 1 digit.<br>$135 \times 3 =$<br>                                                  | Represent place value counters in books alongside a column method for multiplication of up to 3-digit numbers by a single digit.<br> | For $346 \times 9$<br>Short multiplication<br>Expanded<br><div> <b>HT O</b><br/> <math display="block">\begin{array}{r} 346 \\ \times 9 \\ \hline 54 \text{ (9 x 6)} \\ 360 \text{ (9 x 40)} \\ 2700 \text{ (9 x 300)} \\ \hline 3114 \end{array}</math> <br/> leading to compact<br/> <math display="block">\begin{array}{r} 346 \\ \times 9 \\ \hline 3114 \\ 45 \end{array}</math> </div> |
| Distributivity                                  | $3 \times (2 + 4) = 3 \times 2 + 3 \times 4$<br>So the '3' can be 'distributed' across the '2 + 4' into 3 times 2 and 3 times 4<br>                                             | leading to<br>$13 \times 4 = 10 \times 4 + 3 \times 4 = 52$<br>                                                                     | To be able to answer the question in an abstract form.<br>$13 \times 4 = 10 \times 4 + 3 \times 4 = 52$                                                                                                                                                                                                                                                                                      |
| Known facts                                     | Recall x and ÷ facts for x tables up to 12 x 12.                                                                                                                                                                                                                  |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                              |
| Essential Knowledge by the end of Year 4.       | 4x and 8x tables                                                                                                                                                                                                                                                  | 10x bigger                                                                                                                                                                                                              |                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                 | 3x, 6x and 12x tables                                                                                                                                                                                                                                             | Double larger numbers and decimals                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                 | 3x and 9x tables                                                                                                                                                                                                                                                  | 11x and 7x tables                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                 |                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                              |

| Year 5 Multiplication                                                                                                                     |                                                                                                                                                                                                                                                                                                      |                             |                                                                                                                                                                                                                                                                                |   |    |   |    |  |  |   |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|----|---|----|--|--|---|--|--|
|                                                                                                                                           | Vocabulary :<br>lots of, groups of times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition array row, column double, halve share, share equally<br>factor, multiple, prime, composite |                             | Instructional vocabulary:<br>carry on, continue, repeat what comes next? predict describe the pattern, describe the rule<br>find, find all, find different investigate                                                                                                         |   |    |   |    |  |  |   |  |  |
| Objective/Strategy                                                                                                                        | Concrete<br>"doing stage"                                                                                                                                                                                                                                                                            | Pictorial<br>"seeing stage" | Abstract<br>"symbolic stage"                                                                                                                                                                                                                                                   |   |    |   |    |  |  |   |  |  |
| Multiply numbers up to 4 digits by a 1 or 2 digit number using a formal written method, including long multiplication for 2 digit numbers | Same as Yr 4                                                                                                                                                                                                                                                                                         | Same as Yr 4                | Grid method<br>(if needed for conceptual understanding)<br>28 x 27<br><table><tr><td>x</td><td>20</td><td>8</td></tr><tr><td>20</td><td></td><td></td></tr><tr><td>7</td><td></td><td></td></tr></table><br>Addition to be done mentally or across followed by column addition | x | 20 | 8 | 20 |  |  | 7 |  |  |
| x                                                                                                                                         | 20                                                                                                                                                                                                                                                                                                   | 8                           |                                                                                                                                                                                                                                                                                |   |    |   |    |  |  |   |  |  |
| 20                                                                                                                                        |                                                                                                                                                                                                                                                                                                      |                             |                                                                                                                                                                                                                                                                                |   |    |   |    |  |  |   |  |  |
| 7                                                                                                                                         |                                                                                                                                                                                                                                                                                                      |                             |                                                                                                                                                                                                                                                                                |   |    |   |    |  |  |   |  |  |

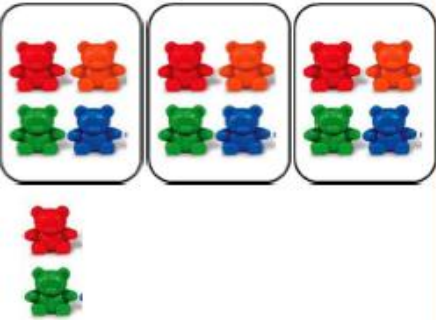
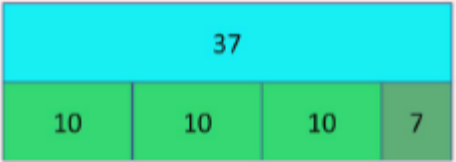
|                                           |                                                                                                                                                                                                                            |                                    |                                                                                                                                                                                                                                                           |
|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           |                                                                                                                                                                                                                            |                                    | <b>Long multiplication</b><br>Expanded<br>28<br>x 27<br>56 (7x8)<br>140 (7 x20)<br>160 (20x8)<br>400 (20x20)<br>756<br>leading to compact<br>28<br>x 27<br>196<br>5<br>560<br>1<br>756<br>1<br>Extend to HTU x TU or<br><u>Th</u> HTU x TU as appropriate |
| Known facts                               | Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers<br>Recall prime numbers up to 19<br>Recognise and use square and cube numbers and the notation for squared (2) and cubed (3) |                                    |                                                                                                                                                                                                                                                           |
| Essential Knowledge by the end of Year 5. | 4x and 8x tables                                                                                                                                                                                                           | 100, 1000 times bigger             |                                                                                                                                                                                                                                                           |
|                                           | 3x, 6x and 12x tables; 3x and 9x tables                                                                                                                                                                                    | 10, 100, 1000 times smaller        |                                                                                                                                                                                                                                                           |
|                                           | 11x and 7x tables                                                                                                                                                                                                          | Double larger numbers and decimals |                                                                                                                                                                                                                                                           |
|                                           |                                                                                                                                                                                                                            |                                    |                                                                                                                                                                                                                                                           |

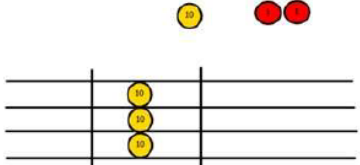
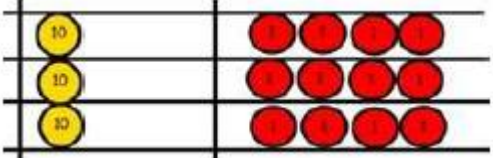
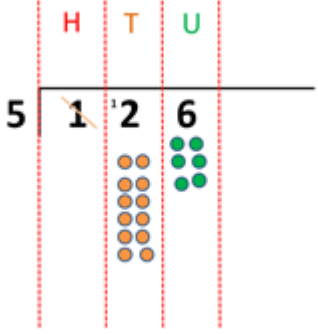
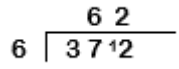
| Year 6 Multiplication                                                                                                         |                                                                                                                                                                                                                                                                                                     |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                               | Vocabulary:<br>lots of, groups of times, multiply, multiplication, multiplied by multiple of, product once, twice, three times... ten times... times as (big, long, wide... and so on) repeated addition array row, column double, halve share, share equally<br>factor, multiple, prime, composite |                             | Instructional vocabulary:<br>carry on, continue, repeat what comes next? predict describe the pattern, describe the rule<br>find, find all, find different investigate                                                                                                                                                                                                                                                                                                                                                            |
| Objective/Strategy                                                                                                            | Concrete<br>"doing stage"                                                                                                                                                                                                                                                                           | Pictorial<br>"seeing stage" | Abstract<br>"symbolic stage"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Multiply multi-digit numbers up to 4 digits by a 2 digit whole number using the formal written method of long multiplication. | Same as Yr 4/5                                                                                                                                                                                                                                                                                      | Same as Yr 4/5              | Grid method<br>(if needed for conceptual understanding)<br>28 x 27 <div> <div>x</div> <div>20</div> <div>8</div> <div>20</div> <div>7</div> </div> Addition to be done mentally or across followed by column addition <div> <b>Long multiplication</b><br/> Expanded<br/> 28<br/> x 27<br/> 56 (7x8)<br/> 140 (7 x20)<br/> 160 (20x8)<br/> 400 (20x20)<br/> 756<br/> leading to compact<br/> 28<br/> x 27<br/> 196<br/> 5<br/> 560<br/> 1<br/> 756<br/> 1<br/> Extend to HTU x TU or<br/> <u>Th</u>HTU x TU as appropriate </div> |

|                                                                |                                                                                                                                                                                                                                                                                                    |      |                                                       |   |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------------------------------------------------------|---|-----|--|--|---|-------------------------------------------------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|-----|------|---|--|--|--|---|---|---|---|---|---|--|--|--|--|---|---|---|---|--|--|---|--|---|
| Multiplying decimals up to 2 decimal places by a single digit. | <p>Represent calculation on a place value grid</p> <p><math>3 \times 3 = 9</math></p> <p><math>3 \times 0.3 = 0.9</math></p> <table><tr><td>T</td><td>O</td><td>•</td><td>Tth</td></tr><tr><td></td><td></td><td>•</td><td><div><div>0.1</div><div>0.1</div><div>0.1</div></div></td></tr></table> | T    | O                                                     | • | Tth |  |  | • | <div><div>0.1</div><div>0.1</div><div>0.1</div></div> | Using the place value grid - present the calculation pictorial in books, if needed. | <p>If place value is secure, use grid method for decimal multiplication if needed for conceptual understanding.</p> <p><math>0.75 \times 6</math></p> <p><math>0.7 \times 6 = 4.2</math></p> <p><math>0.05 \times 6 = 0.3</math></p> <p><math>0.75 \times 6 = 4.5</math></p> <p>Make explicit links between decimals and money</p> <table><tr><td>x</td><td>0.7</td><td>0.05</td></tr><tr><td>6</td><td></td><td></td></tr></table> <p>Remind children that the single digit belongs in the units column. Line up the decimal points in the question and the answer.</p> <table><tr><td></td><td>3</td><td>.</td><td>1</td><td>9</td></tr><tr><td>x</td><td>8</td><td></td><td></td><td></td></tr><tr><td></td><td>2</td><td>5</td><td>.</td><td>5</td></tr><tr><td></td><td></td><td>1</td><td></td><td>7</td></tr></table> | x | 0.7 | 0.05 | 6 |  |  |  | 3 | . | 1 | 9 | x | 8 |  |  |  |  | 2 | 5 | . | 5 |  |  | 1 |  | 7 |
| T                                                              | O                                                                                                                                                                                                                                                                                                  | •    | Tth                                                   |   |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
|                                                                |                                                                                                                                                                                                                                                                                                    | •    | <div><div>0.1</div><div>0.1</div><div>0.1</div></div> |   |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
| x                                                              | 0.7                                                                                                                                                                                                                                                                                                | 0.05 |                                                       |   |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
| 6                                                              |                                                                                                                                                                                                                                                                                                    |      |                                                       |   |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
|                                                                | 3                                                                                                                                                                                                                                                                                                  | .    | 1                                                     | 9 |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
| x                                                              | 8                                                                                                                                                                                                                                                                                                  |      |                                                       |   |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
|                                                                | 2                                                                                                                                                                                                                                                                                                  | 5    | .                                                     | 5 |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |
|                                                                |                                                                                                                                                                                                                                                                                                    | 1    |                                                       | 7 |     |  |  |   |                                                       |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |   |     |      |   |  |  |  |   |   |   |   |   |   |  |  |  |  |   |   |   |   |  |  |   |  |   |

|                                           |                                                                                                  |                                    |  |
|-------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------|--|
| Known facts                               | Identify common factors, common multiples and prime numbers                                      |                                    |  |
| Essential Knowledge by the end of Year 6. | Multiplication facts up to $12 \times 12$                                                        | Partition to multiply mentally     |  |
|                                           | Apply place value to derive multiplication facts, e.g. $3 \times 4 = 12$ so $3 \times 0.4 = 1.2$ | Double larger numbers and decimals |  |
|                                           |                                                                                                  |                                    |  |
|                                           |                                                                                                  |                                    |  |

| Year 3 Division                    |                                                                                                                                                                                                                         |                                                                                              |                                                                                                                                                                  |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | <b>Vocabulary:</b><br>share, share equally one each, two each, three each... group in pairs, threes... tens equal groups of ÷, divide, division, divided by, divided into left, left over, remainder, dividend, divisor |                                                                                              | <b>Instructional vocabulary:</b><br>calculate, work out, solve, investigate question, answer, check                                                              |
| Objective/Strategy                 | Concrete<br>"doing stage"                                                                                                                                                                                               | Pictorial<br>"seeing stage"                                                                  | Abstract<br>"symbolic stage"                                                                                                                                     |
| 2 digit number divided by 1 digit. | <div>How could I calculate <math>72 \div 3</math>?</div> <div>Informal exploration with manipulatives supports the progression to formal written methods—which is continued in Year 4.</div>                            | <p>Use knowledge of time tables to calculate division.</p> <p><math>27 \div 3 = 9</math></p> | <p>Using known facts</p> <p>If <math>3 \times 2 = 6</math>, then <math>30 \times 2 = 60</math>, <math>60 \div 3 = 20</math> and <math>30 = 60 \div 2</math>.</p> |

|                                                    |                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                          |
|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 2 digit number divided by 1 digit with remainders. |  <p><math>14 \div 3 =</math><br/>Divide objects between groups and see how much is left over</p> |  <p>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.</p> <p>Draw dots and group them to divide an amount and clearly show a remainder.</p>  <p>Use bar models to show division with remainders.</p>  | Complete written divisions and show the remainder using r.               |
| Known facts                                        | Recall and use $\times$ and $\div$ facts for the 3, 4, 6, 8 and 9 $\times$ tables                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                          |
| Essential Knowledge by the end of Year 3.          | Review division facts (2 $\times$ , 5 $\times$ and 10 $\times$ tables)                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Halve 2 digit numbers                                                    |
|                                                    | Division facts (4 $\times$ table)                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Division facts (3 $\times$ table)                                        |
|                                                    | Division facts (8 $\times$ table)                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Division facts (6 $\times$ table)                                        |
|                                                    | Division facts (9 $\times$ table)                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                          |
| Tests of divisibility                              | KS1: 2, 5, 10                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Any number with a digit sum of a multiple of 3, will divide equally by 3 |

| Year 4 Division                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                              | <b>Vocabulary:</b><br>share, share equally one each, two each, three each...<br>group in pairs, threes... tens equal groups of $\div$ , divide, division, divided by, divided into left, left over, remainder, dividend, divisor                                                                                                                                                                                                                |                                                                                                                                                     | <b>Instructional vocabulary:</b><br>calculate, work out, solve, investigate question, answer, check                                                                                                                                                                                                                                                                                                                               |
| <b>Objective/Strategy</b>                                                                    | <b>Concrete "doing stage"</b>                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Pictorial "seeing stage"</b>                                                                                                                     | <b>Abstract "symbolic stage"</b>                                                                                                                                                                                                                                                                                                                                                                                                  |
| multiply two-digit and three-digit numbers by a one-digit number using formal written layout | Same as Yr 3<br>$42 \div 3 =$<br>Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.<br><br> <p>We exchange this ten for ten ones and then share the ones equally among the groups.</p> |  <p>Use place value grids to develop conceptual awareness.</p> | Short division<br>$372 \div 6 =$<br><br>'372 divided by 6. 3 hundreds cannot be shared equally between 6, so exchange the hundreds for 30 tens. I now have 37 tens which shared equally between 6 is 6 with a remainder of 1 ten. Exchange the ten for 10 units. I now have 12 units which shared equally between 6 is 2. The answer is 62.' |

|                                           |                                                                                                                                                                               |                                                                                     |  |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
|                                           | We look how much in 1 group so the answer is 14.                                                                                                                              |                                                                                     |  |
| Known facts                               | Recall $\times$ and $\div$ facts for $\times$ tables up to $12 \times 12$ .                                                                                                   |                                                                                     |  |
| Essential Knowledge by the end of Year 4. | Division facts (4x and 8x tables)                                                                                                                                             | 10x smaller                                                                         |  |
|                                           | Division facts (3 x, 6 x and 12 x tables)                                                                                                                                     | Halve larger numbers and decimals                                                   |  |
|                                           | Division facts (3 x and 9 x tables)                                                                                                                                           | Division facts (11 x and 7 x tables)                                                |  |
|                                           | Division facts (4x and 8x tables)                                                                                                                                             | 10x smaller                                                                         |  |
| Tests of divisibility                     | Any number with a digit sum of a multiple of 3, will divide equally by 3<br>KS1: 2, 5, 10 Any number with a digit sum of a multiple of 3 and is even will divide equally by 6 | Any number with a digit sum of a multiple of 3 and is even will divide equally by 6 |  |

| Year 5 Division                                                                                                                                              |                                                                                                                                   |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                              | <b>Vocabulary:</b><br>equal groups of divide, division, divided by, divided into remainder factor, quotient, divisible by inverse |                                                                         | <b>Instructional vocabulary:</b><br>calculate, work out, solve, investigate question, answer, check same, different missing number/s number facts, number pairs, number bonds greatest value, least value                                                                                                                                                                                                                    |
| <b>Objective/Strategy</b>                                                                                                                                    | <b>Concrete<br/>"doing stage"</b>                                                                                                 | <b>Pictorial<br/>"seeing stage"</b>                                     | <b>Abstract<br/>"symbolic stage"</b>                                                                                                                                                                                                                                                                                                                                                                                         |
| 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 | Same as year 4                                                                                                                    | Same as Year 4                                                          | Short division<br>$483 \div 7 =$<br>$\begin{array}{r} 69r1 \\ 7 \overline{) 4864} \end{array}$<br>"484 divided by 7. 4 hundreds cannot be shared equally between 7, so exchange the hundreds for 40 tens. I now have 48 tens which shared equally between 7 is 6 with a remainder of 6 tens. Exchange the 6 tens for 60 units, we now have 64 units. 64 shared equally between 7 equals 9 remainder 1. The answer is 69 r1." |
| Known facts                                                                                                                                                  | Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Recall prime numbers up to 19      |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Essential Knowledge by the end of Year 5.                                                                                                                    | Division facts (4 x and 8 x tables)                                                                                               | 100, 1000 times smaller                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                              | Division facts (3 x, 6 x and 12 x tables; 3 x and 9 x tables)                                                                     | Partition to divide mentally                                            |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                              | Division facts (11 x and 7 x tables)                                                                                              | Halve larger numbers and decimals                                       |                                                                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                              |                                                                                                                                   |                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Tests of divisibility                                                                                                                                        | Tests for 2,3,5,6 &10                                                                                                             | Any number with a digit sum of a multiple of 9 will divide equally by 9 |                                                                                                                                                                                                                                                                                                                                                                                                                              |

| Year 6 Division                                                                                                                                                                                                          |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                          | <b>Vocabulary</b><br>equal groups of divide, division, divided by, divided into remainder factor, quotient, divisible by inverse, remainders as fractions or decimals       |                                                                                                                                                                                                                                                         | <b>Instructional vocabulary:</b><br>calculate, work out, solve, investigate question, answer, check<br>same, different missing number/s number facts, number pairs, number bonds greatest value, least value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
| <b>Objective/Strategy</b>                                                                                                                                                                                                | <b>Concrete</b><br>"doing stage"                                                                                                                                            | <b>Pictorial</b><br>"seeing stage"                                                                                                                                                                                                                      | <b>Abstract</b><br>"symbolic stage"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
| Divide numbers up to 4 digits by a 2 digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate to the context. |                                                                                                                                                                             |                                                                                                                                                                                                                                                         | <table><tr><th>1. Divide.</th><th>2. Multiply &amp; subtract.</th><th>3. Drop down the next digit.</th></tr><tr><td><div><div>h t o</div><div>1</div><div>2 ) 2 7 8</div></div><p>Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.</p></td><td><div><div>h t o</div><div>1</div><div>2 ) 2 7 8</div><div>- 2</div><div>0</div></div><p>Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.</p></td><td><div><div>h t o</div><div>1 8</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div></div><p>Next, drop down the 7 of the tens next to the zero.</p></td></tr><tr><th>Divide.</th><th>Multiply &amp; subtract.</th><th>Drop down the next digit.</th></tr><tr><td><div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div></div><p>Divide 2 into 7. Place 3 into the quotient.</p></td><td><div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1</div></div><p>Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.</p></td><td><div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div></div><p>Next, drop down the 8 of the ones next to the 1 leftover ten.</p></td></tr><tr><th>1. Divide.</th><th>2. Multiply &amp; subtract.</th><th>3. Drop down the next digit.</th></tr><tr><td><div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div></div><p>Divide 2 into 18. Place 9 into the quotient.</p></td><td><div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div><div>- 1 8</div><div>0</div></div><p>Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.</p></td><td><div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div><div>- 1 8</div><div>0</div></div><p>There are no more digits to drop down. The quotient is 139.</p></td></tr></table> | 1. Divide. | 2. Multiply & subtract. | 3. Drop down the next digit. | <div><div>h t o</div><div>1</div><div>2 ) 2 7 8</div></div> <p>Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.</p> | <div><div>h t o</div><div>1</div><div>2 ) 2 7 8</div><div>- 2</div><div>0</div></div> <p>Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.</p> | <div><div>h t o</div><div>1 8</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div></div> <p>Next, drop down the 7 of the tens next to the zero.</p> | Divide. | Multiply & subtract. | Drop down the next digit. | <div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div></div> <p>Divide 2 into 7. Place 3 into the quotient.</p> | <div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1</div></div> <p>Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.</p> | <div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div></div> <p>Next, drop down the 8 of the ones next to the 1 leftover ten.</p> | 1. Divide. | 2. Multiply & subtract. | 3. Drop down the next digit. | <div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div></div> <p>Divide 2 into 18. Place 9 into the quotient.</p> | <div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div><div>- 1 8</div><div>0</div></div> <p>Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.</p> | <div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div><div>- 1 8</div><div>0</div></div> <p>There are no more digits to drop down. The quotient is 139.</p> |
|                                                                                                                                                                                                                          | 1. Divide.                                                                                                                                                                  | 2. Multiply & subtract.                                                                                                                                                                                                                                 | 3. Drop down the next digit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                          | <div><div>h t o</div><div>1</div><div>2 ) 2 7 8</div></div> <p>Two goes into 2 one time, or 2 hundreds ÷ 2 = 1 hundred.</p>                                                 | <div><div>h t o</div><div>1</div><div>2 ) 2 7 8</div><div>- 2</div><div>0</div></div> <p>Multiply 1 × 2 = 2, write that 2 under the two, and subtract to find the remainder of zero.</p>                                                                | <div><div>h t o</div><div>1 8</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div></div> <p>Next, drop down the 7 of the tens next to the zero.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                          | Divide.                                                                                                                                                                     | Multiply & subtract.                                                                                                                                                                                                                                    | Drop down the next digit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                          | <div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div></div> <p>Divide 2 into 7. Place 3 into the quotient.</p>                                | <div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1</div></div> <p>Multiply 3 × 2 = 6, write that 6 under the 7, and subtract to find the remainder of 1 ten.</p>                                   | <div><div>h t o</div><div>1 3</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div></div> <p>Next, drop down the 8 of the ones next to the 1 leftover ten.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                          | 1. Divide.                                                                                                                                                                  | 2. Multiply & subtract.                                                                                                                                                                                                                                 | 3. Drop down the next digit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |
|                                                                                                                                                                                                                          | <div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div></div> <p>Divide 2 into 18. Place 9 into the quotient.</p> | <div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div><div>- 1 8</div><div>0</div></div> <p>Multiply 9 × 2 = 18, write that 18 under the 18, and subtract to find the remainder of zero.</p> | <div><div>h t o</div><div>1 3 9</div><div>2 ) 2 7 8</div><div>- 2</div><div>0 7</div><div>- 6</div><div>1 8</div><div>- 1 8</div><div>0</div></div> <p>There are no more digits to drop down. The quotient is 139.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                         |                              |                                                                                                                             |                                                                                                                                                                                          |                                                                                                                                                      |         |                      |                           |                                                                                                                                              |                                                                                                                                                                                                                       |                                                                                                                                                                                            |            |                         |                              |                                                                                                                                                                             |                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                        |

|                                                                                                                                                                          |                                                                                                                              |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Divide numbers up to 4 digits by a 2 digit number using the formal written method of short division where appropriate, interpreting remainders according to the context. | Same as year 4                                                                                                               | Same as Year 4                                                                | Short division<br>$97.6 \div 5 =$<br><br>$\begin{array}{r} 19.52 \\ 5 \overline{) 97.610} \\ \underline{5} \phantom{00} \\ 47 \phantom{0} \\ \underline{45} \phantom{0} \\ 26 \phantom{0} \\ \underline{25} \phantom{0} \\ 10 \phantom{0} \\ \underline{10} \\ 0 \end{array}$<br><br>"97.6 divided by 5. 9 tens shared equally between 5 is 1 with a remainder of 4 tens. Exchange the ten for 10 units. I now have 47 units which shared equally between 5 is 9 with a remainder of 2 units. Exchange the 2 units for 20 tenths, we now have 26 tenths. 26 shared equally between 5 equals 5 with a remainder of 1 tenth. Extend the dividend with a 0 in the hundredths column. Exchange the tenth for 10 hundredths. 10 shared equally between 5 equals 2. The answer is 19.52." |
| Known facts                                                                                                                                                              | Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Recall prime numbers up to 19 |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Essential Knowledge by the end of Year 6.                                                                                                                                | Division facts up to $12 \times 12$                                                                                          | Halve larger numbers and decimals                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                          | Apply place value to derive division facts, e.g.<br>$12 \div 3 = 4$ so $1.2 \div 3 = 0.4$                                    | Partition to divide mentally including decimals                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                          |                                                                                                                              |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                                                                                                                                          |                                                                                                                              |                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Tests of divisibility                                                                                                                                                    | Tests for 2,3,5,6, 9 & 10                                                                                                    | Any number where the last two digits are divisible by 4, will all divide by 4 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |