The following calculation policy has been devised to meet requirements of the National Curriculum 2014 for the teaching and learning of mathematics, and is also designed to give pupils a consistent and smooth progression of learning in calculations across the school.

**Age stage expectations**

The calculation policy is organised according to age stage expectations as set out in the National Curriculum 2014, however it is vital that pupils are taught according to the stage that they are currently working at, being moved onto the next level as soon as they are ready, or working at a lower stage until they are secure enough to move on.

**Providing a context for calculation:**

It is important that any type of calculation is given a real life context or problem solving approach to help build children’s understanding of the purpose of calculation, and to help them recognise when to use certain operations and methods when faced with problems. This must be a priority within calculation lessons.

**Choosing a calculation method:**

Children need to be taught and encouraged to use the following processes in deciding what approach they will take to a calculation, to ensure they select the most appropriate method for the numbers involved:

- Can I do it in my head using a mental strategy?
- Could I use some jottings to help me?
- Should I use a written method to work it out?
Magnitude of calculations

Year 3 – add numbers with up to three-digits, HTU + multiples of 10, HTU + multiples of 100, subtract numbers up to three-digits, HTU – U, HTU – multiples of 10, HTU – multiples of 100, HTU – HTU, TU x U, TU ÷ U

Year 4 - add and subtract numbers with up to four-digits, ThHTU + ThHTU, ThHTU - ThHTU, add and subtract decimals with up to two decimal places in the context of money, multiply three numbers together, TU x U, HTU x U, TU x U, multiply by zero and one, TU ÷ U, HTU ÷ U

Year 5 – add and subtract numbers with more than four-digits, add and subtract decimals with up to three decimal places, ThHTU x U, ThHTU x TU, HTU x TU, multiply whole numbers and decimals with up to three-decimal places by 10, 100 and 1000, divide numbers with up to four-digits by U (including remainders as fractions and decimals and rounding according to the context)

Year 6 - add and subtract numbers with more than four-digits, add and subtract decimals with up to three decimal places, multiply numbers with up to four-digits by TU, multiply numbers with up to two-decimal places by a whole number, divide numbers up to four-digits by TU (interpreting remainder according to the context), divide decimals up to two-decimal places by U or TU
Mathematics is an interconnected subject in which pupils need to be able to move fluently between representations of mathematical ideas. ... pupils should make rich connections across mathematical ideas to develop fluency, mathematical reasoning and competence in solving increasingly sophisticated problems. They should also apply their mathematical knowledge to science and other subjects.

National Curriculum 2014
ADDITION

**End of Year Expectations**

**Year 3**
- Add numbers with up to three-digits (leading to formal written column method)
  - HTU + multiples of 10
  - HTU + multiples of 100
- Ensure children have the opportunity to add more than two numbers with differing numbers of digits
- Children should partition numbers, up to 1000, in different ways,
  e.g. $100 + 40 + 6$ or $100 + 30 + 16$
- Solve problems in different contexts including missing number problems

**Year 4**
- Add numbers with up to four-digits (formal written column method) including numbers with up to two decimal places in the context of money
- Ensure children have the opportunity to add more than two numbers including decimals, with differing numbers of digits
- Solve two-step problems in different contexts including missing number problems

**Possible Concrete and Visual Representations**

**Teacher Modelling/Children's Recording**

Children apply, develop and secure their understanding of place value and begin to record in columns.

Manipulatives should be used alongside algorithms.

Column addition (no exchanging) with up to three-digits

\[
\begin{align*}
40 + 1 & \quad 40 + 3 \\
20 + 8 & \quad 20 + 8 \\
60 + 9 & = 69 \\
\end{align*}
\]

Expanded recording without exchange

\[
\begin{align*}
10 + 1 & = 71 \\
\end{align*}
\]

Expanded recording with exchange

\[
\begin{align*}
100 + 40 + 1 & \quad HTU \\
+ 100 + 20 + 8 & \quad 1.41 + 1.28 \\
\end{align*}
\]

Compact (column) recording

\[
\begin{align*}
200 + 60 + 9 & = 269 \\
\end{align*}
\]

**Fluency**

Count in ones, tens and hundreds maintaining fluency through varied and frequent practice

- Count from 0 in multiples of 4, 8, 50 and 100
- Find 10 or 100 more than a number
- Mentally add HTU + units, HTU + tens, HTU + hundreds
- Perform mental calculations with two-digit numbers, the answer could exceed 100

**Vocabulary:** count on, add, and, addition, plus, more, sum, total, altogether,

Count in 6s, 7s, 8s, 25s and 100s

- Find 1000 more than a number
- Perform mental calculations with increasingly large numbers to aid fluency

**Vocabulary:** count on, add, and, addition, plus, more, sum, total, altogether, increase

**Count in ones, tens and hundreds maintaining fluency through varied and frequent practice**

- Count from 0 in multiples of 4, 8, 50 and 100
- Find 10 or 100 more than a number
- Mentally add HTU + units, HTU + tens, HTU + hundreds
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Count in 6s, 7s, 8s, 25s and 100s

- Find 1000 more than a number
- Perform mental calculations with increasingly large numbers to aid fluency

**Vocabulary:** count on, add, and, addition, plus, more, sum, total, altogether, increase
### Addition

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly. Addition and subtraction should be taught together.

### End of Year Expectations

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Possible Concrete and Visual Representations</th>
<th>Teacher Modelling/Children’s Recording</th>
<th>Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add numbers with more than four-digits and decimals up to three places (formal written column method)</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td><em>Manipulatives could be used alongside algorithms</em></td>
<td>Count forwards in powers of ten up to 100000</td>
</tr>
<tr>
<td>ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD MORE THAN TWO NUMBERS INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td>2141 + 1128 = 3269</td>
<td>Count forwards in positive and negative whole numbers through zero</td>
</tr>
<tr>
<td>Solve addition (and subtraction) multi-step problems selecting and justifying methods</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td>2.141 + 1.12 = 3.263</td>
<td>Practise mental calculations with increasingly large numbers</td>
</tr>
<tr>
<td>Practise mental calculations with increasingly large numbers</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td>3269 + 0.35 = 32.88</td>
<td>Practise fluency of written methods</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 6</th>
<th>Possible Concrete and Visual Representations</th>
<th>Teacher Modelling/Children’s Recording</th>
<th>Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add numbers with more than four-digits and decimals up to three places (formal written column method)</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td><img src="image" alt="Bar Models" /></td>
<td>Count in tens and hundreds increasing fluency of order and place value</td>
</tr>
<tr>
<td>ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD MORE THAN TWO NUMBERS, INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td>5189 + 3128 = 8317</td>
<td>Perform increasingly complex mental calculations and those with increasingly large numbers to aid fluency</td>
</tr>
<tr>
<td>Solve more complex calculations mentally</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td>51.89 + 3.128 = 55.018</td>
<td>Vocabulary: count on, add, and, addition, plus, more, sum, total, altogether, increase</td>
</tr>
<tr>
<td>Solve addition (and subtraction) multi-step problems in contexts, deciding which operations and methods to use and why</td>
<td><img src="image" alt="Concrete and Visual Representation" /></td>
<td><img src="image" alt="Partial Numbered and Blank Number Lines" /></td>
<td></td>
</tr>
</tbody>
</table>
Subtraction
## Subtraction

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly.

Addition and subtraction should be taught together.

### End of Year Expectations

| **Year 3** |
|------------------|------------------|
| Subtract numbers with up to three-digits (formal written column method) HTU – U HTU – multiples of 10 HTU – multiples of 100 HTU – HTU Children apply, develop and secure their understanding of place value and begin to record in columns |

### Possible Concrete and Visual Representations

#### Year 3

- Subtract numbers with up to three-digits
- HTU – U
- HTU – multiples of 10
- HTU – multiples of 100
- HTU – HTU

Children apply, develop and secure their understanding of place value and begin to record in columns.

### Teacher Modelling/Children’s Recording

**Children SHOULD use manipulatives alongside algorithms to transition between practical and abstract**

<table>
<thead>
<tr>
<th><strong>no exchanging</strong></th>
<th><strong>with exchanging</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>68 - 23</td>
<td>63 - 28</td>
</tr>
<tr>
<td>60 8</td>
<td>60 10 + 3</td>
</tr>
<tr>
<td>20 3</td>
<td>20 8</td>
</tr>
<tr>
<td>40 and 5 = 45</td>
<td>30 and 5 = 35</td>
</tr>
</tbody>
</table>

**Column subtraction (no exchanging)**

148 - 121 = 27

100 40 8
100 20 1

20 and 7 = 27

**Column subtraction (with exchanging)**

600 - 70 - 10 + 3
300 60 7

723 - 367

300 and 50 and 6 = 356

6 11 / 3
- 3 6 7

3 5 6

**Fluency**

- Count back in ones, tens and hundreds maintaining fluency through varied and frequent practice
- Switch count between hundreds, tens and ones e.g. 500, 400, 300, 290, 280, 270, 269, 268, 267
- Mentally add HTU + ones, HTU + tens, HTU + hundreds
- Perform mental calculations with two-digit numbers, the answer could exceed 100
- Find ten and a hundred less than a number with up to three-digits

**Vocabulary:** subtraction, leave, take away, fewer, subtract, minus, count back, difference between

### Year 4

Subtract numbers with up to four-digits including up to two decimal places in the context of money (formal written column method)

Understand subtraction as the inverse of addition

Solve two-step problems deciding upon the appropriate operations and methods and justifying choices made.

#### Year 4

- Subtract numbers with up to four-digits including up to two decimal places in the context of money

- Subtract numbers with up to four-digits including up to two decimal places in the context of money

Bar Models

<table>
<thead>
<tr>
<th>100</th>
<th>10</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>1</th>
</tr>
</thead>
</table>

Ensure children can solve calculations where zero is a place holder

**Vocabulary:** subtraction, leave, take away, fewer, subtract, minus, count back, difference between

- Count back in 6, 7, 9, 26 and 1000
- Count back through zero to include negative numbers
- Find 1001 less than a number

Continue to practice mental calculations with increasingly large numbers to aid fluency

**Vocabulary:** subtraction, leave, take away, fewer, subtract, minus, count back, difference between
## Subtraction

Pupils develop the concept of addition and subtraction and are enabled to use these operations flexibly. Addition and subtraction should be taught together.

### End of Year Expectations

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Year 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subtract numbers with more than four-digits</td>
<td>Subtract numbers with more than four-digits</td>
</tr>
<tr>
<td>Subtract numbers with up to three decimal places</td>
<td>Subtract numbers with up to three decimal places</td>
</tr>
<tr>
<td>Subtract larger numbers with more than four digits and those involving numbers up to three decimal places</td>
<td>Subtract multi-digit numbers including numbers with up to three decimal places</td>
</tr>
<tr>
<td>(formal written column method)</td>
<td>(formal written column method)</td>
</tr>
<tr>
<td>ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD MORE THAN TWO NUMBERS INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS</td>
<td>ENSURE CHILDREN HAVE THE OPPORTUNITY TO ADD MORE THAN TWO NUMBERS INCLUDING DECIMALS, WITH DIFFERING NUMBERS OF DIGITS</td>
</tr>
<tr>
<td>Solve (addition) and subtraction multi-step problems selecting and justifying methods</td>
<td>Solve (addition) and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</td>
</tr>
</tbody>
</table>

### Teacher Modelling/Children's Recording

**Children might use manipulatives alongside algorithms**

**Column subtraction (no exchanging)**

\[
\begin{array}{c}
\text{13548} \\
- \text{12128} \\
\hline
\text{1420} \\
\end{array}
\]

**Column subtraction (with exchanging)**

\[
\begin{array}{c}
\text{1.3423} \\
- \text{1.2678} \\
\hline
\text{0.0745} \\
\end{array}
\]

**Ensure children can solve calculations where zero is a place holder**

\[
\begin{array}{c}
\text{1.48} \\
- \text{1.21} \\
\hline
\text{0.27} \\
\end{array}
\]

**Column subtraction (no exchanging)**

\[
\begin{array}{c}
\text{6.111} \\
- \text{3.67} \\
\hline
\text{3.56} \\
\end{array}
\]

**Column subtraction (with exchanging)**

\[
\begin{array}{c}
\text{6.111} \\
- \text{3.67} \\
\hline
\text{3.56} \\
\end{array}
\]

### Fluency

- Count backwards in powers of ten up to one million
- Count backwards in positive and negative whole numbers through zero
- Practise mental calculations with increasingly large numbers

#### Vocabulary:
- subtraction, leave, take away, fewer, subtract, minus, count back, difference between

- Undertake mental calculations with increasingly large numbers and more complex calculations

#### Vocabulary:
- subtraction, leave, take away, fewer, subtract, minus, count back, difference between

Subtraction with decimals up to three decimal places including in different contexts e.g. money and measures
# Multiplication

**Multiplication** – multiplication and division should be taught together—refer to structures of multiplication.

<table>
<thead>
<tr>
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<th>Possible concrete and visual representation</th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TU x U</td>
<td>Cuisenaire to represent scaling</td>
<td>Children <em>must</em> use manipulatives alongside algorithms</td>
<td>Count from 0 in multiples of 4, 8, 50 and 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Use multiples of 2, 3, 4, 5, 8, 10, 50 and 100</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Practise mental recall of multiplication tables – 3, 4 and 8 times tables</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Connect the 2, 4 and 8 times tables using doubling</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Develop efficient mental methods using commutativity and multiplication facts to derive related facts e.g. 4 x 17 = 17 x 4 x 5 = 12 x 20</td>
</tr>
<tr>
<td></td>
<td>arrays</td>
<td>expanded methods – grid and area</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vocabulary: lots of, multiplied, double, groups of, array, multiply, times, multiplication, product</td>
</tr>
<tr>
<td><strong>Year 4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TU x U</td>
<td></td>
<td></td>
<td>Count in multiples of 6, 7, 9, 25 and 1000</td>
</tr>
<tr>
<td>HTU x U</td>
<td></td>
<td></td>
<td>Recall and use multiplication facts up to 12 x 12 with increasing fluency</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Derive multiplication facts with up to three-digits</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Recognise and use factor pairs and commutativity in mental calculations</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Use the distributive law</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Combine knowledge of number facts and rules of arithmetic to solve mental and written calculations e.g. 2 x 6 x 5 x 10 x 6</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vocabulary: lots of, multiplied, double, groups of, array, multiply, times, multiplication, product</td>
</tr>
</tbody>
</table>

**Example:**

4 x 13 = 40 + 12 = 52

**Progressing to developing fluency in short multiplication**

1 3 1 3 3

\[ \begin{array}{ccc}
1 & 1 & 1 \\
1 & 1 & 1 \\
1 & 1 & 1 \\
\end{array} \]

5 2 5 3 2

1 1

Start with digits that are below five so children can practise method without encountering difficulty with multiplication tables.
### Multiplication - multiplication and division should be taught together—refer to structures of multiplication

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</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 5</strong></td>
<td></td>
<td><strong>Children might use manipulatives alongside algorithms</strong></td>
<td></td>
</tr>
<tr>
<td>Th H T U x U</td>
<td>Cuisenaire to represent scaling</td>
<td>Short multiplication</td>
<td></td>
</tr>
<tr>
<td>HT U x T U</td>
<td></td>
<td>1 3 2 4 x 6</td>
<td></td>
</tr>
<tr>
<td>Th H T U x T U</td>
<td></td>
<td>7 9 4 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1 2</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 9 4 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1 2</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td><strong>Long multiplication</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 3 2 4 x 2 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>7 9 4 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 6 4 8 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 4 4 2 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>6 4 8 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 4 2 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 1 1</td>
<td></td>
</tr>
<tr>
<td><strong>Year 6</strong></td>
<td></td>
<td><strong>Long multiplication</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1 3 2 4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.1 0.1 0.1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.01 0.01 0.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0.01 0.01 0.01</td>
<td></td>
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<td></td>
<td>0.01 0.01 0.01</td>
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<td>1 1 1</td>
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<td>1 1 1</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>1 1 1</td>
<td></td>
</tr>
</tbody>
</table>

**Fluency**
- Count forwards in steps of powers of 10 from any given number up to 1,000,000
- Practise and extend use of formal written method of short multiplication
- Apply all multiplication tables frequently. Commit them to memory and use them confidently to make larger calculations
- Multiply numbers mentally drawing upon known facts

**Vocabulary:** lots of, multiplied, double, groups of, array, multiply, times, multiplication, product

**Year 6**
- Multiply numbers up to 4-digit x TU
- Multiply numbers with up to two decimal places x whole number
- Multiply multi-digit numbers up to four-digits by a two-digit whole number
- Multiply single-digit numbers with up to two-decimal places by whole numbers
- Solve problems involving all four operations

**Vocabulary:** lots of, multiplied, product, double, groups of, array, multiply, times, multiplication
## Division

Division - multiplication and division should be taught together – refer to structures of division

<table>
<thead>
<tr>
<th>End of Year Expectations</th>
<th>Possible concrete and visual representation</th>
<th>Teacher Modelling/Children’s Recording</th>
<th>Fluency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 3</strong></td>
<td><img src="image" alt="Cuisenaire representation" /></td>
<td><img src="image" alt="Children should use manipulatives alongside algorithms" /></td>
<td>Recall and use related division facts for the 3, 4 and 8x tables (Continue to practise other tables)</td>
</tr>
<tr>
<td>TU ÷ U</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>Repeated subtraction - chunking</td>
<td>Write and calculate mathematical statements for division using what is known</td>
</tr>
<tr>
<td>Develop a reliable written method for division</td>
<td><img src="image" alt="Number line and vertical recording for chunking" /></td>
<td>Ensure children see/understand the link between grouping on a number line and vertical recording for chunking</td>
<td>Use division facts to derive related division facts e.g. using 6 ÷ 3 = 2 to work out 60 ÷ 3 = 20</td>
</tr>
<tr>
<td>Solve problems involving missing numbers</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>95 ÷ 5 = 19</td>
<td></td>
</tr>
<tr>
<td>Solve problems including those that involve scaling</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>95 - 50 (10 x 5)</td>
<td>Vocabulary: equal groups of, divided by, lots of, divide, divisible by, factor, division, halve, half, share equally</td>
</tr>
<tr>
<td>Recognise, find and name 1/10 and 1/10 of an object, shape or quantity</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>45 - 25 (5 x 5)</td>
<td></td>
</tr>
<tr>
<td>Understand the link between unit fractions and division</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>20 - 20 (4 x 5)</td>
<td></td>
</tr>
<tr>
<td>Connect 1/10 to division by 10</td>
<td><img src="image" alt="Arrays representation" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Count in tenths</td>
<td><img src="image" alt="Arrays representation" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Year 4</strong></td>
<td><img src="image" alt="Cuisenaire representation" /></td>
<td>Fact Box</td>
<td>Continue to practise recalling division facts for multiplication tables up to 12 x 12</td>
</tr>
<tr>
<td>TU = U, HTU = U</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>2 x 5 = 10</td>
<td>Practise mental methods and extend to three-digit numbers for example 200 x 3 = 600 into 600 ÷ 3 = 200</td>
</tr>
<tr>
<td>Become fluent in the formal written method of short division with exact answers when dividing by a one-digit number</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>5 x 5 = 25</td>
<td>Use place value, known and derived facts to divide mentally, including dividing by 1</td>
</tr>
<tr>
<td>Divide one- or two-digit numbers by 10 or 100, identifying value of digits as tenths or hundredths</td>
<td><img src="image" alt="Arrays representation" /></td>
<td>10 x 5 = 50</td>
<td>Recognise and use factor pairs and commutativity in mental calculations</td>
</tr>
<tr>
<td>Solve two-step problems in different contexts, choosing the appropriate operation, working with increasingly harder numbers including correspondence questions e.g. three cakes shared equally between 10 children</td>
<td><img src="image" alt="Arrays representation" /></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Bar models" /></td>
<td><img src="image" alt="Bar models" /></td>
<td>560 ÷ 4</td>
<td>Vocabulary: equal groups of, divided by, lots of, quotient, divide, divisible by, factor, division, halve, half, share equally</td>
</tr>
<tr>
<td><img src="image" alt="Bar models" /></td>
<td><img src="image" alt="Bar models" /></td>
<td>1 4 0</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Bar models" /></td>
<td><img src="image" alt="Bar models" /></td>
<td>5 1 6 0</td>
<td></td>
</tr>
</tbody>
</table>

See Appendix 1 – teaching short division with manipulatives
## Division - multiplication and division should be taught together—refer to structures of division

### End of Year Expectations

<table>
<thead>
<tr>
<th>Year 5</th>
<th>Divide numbers with up to 4 digits by U</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Identify factors, including finding all factor pairs of a number, and common factors of two numbers</td>
</tr>
<tr>
<td></td>
<td>Practise and extend the formal written method of short division: numbers up to four-digits by a one-digit number and interpret remainders appropriately for the context</td>
</tr>
<tr>
<td></td>
<td>Interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders as fractions, as decimals or by rounding as appropriate for the context</td>
</tr>
<tr>
<td></td>
<td>Use multiplication and division as inverses</td>
</tr>
<tr>
<td></td>
<td>Solve problems involving division including scaling by simple fractions and problems involving simple rates</td>
</tr>
<tr>
<td></td>
<td>Divide whole numbers and those involving decimals by 10, 100 &amp; 1000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year 6</th>
<th>Divide numbers with up to 4 digits by TU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Divide decimals up to two-decimal places by U or TU</td>
</tr>
<tr>
<td></td>
<td>Divide numbers up to 4-digits by a 2-digit whole number using formal written methods of long division, interpret remainders as whole numbers, fractions or by rounding, as appropriate for the context</td>
</tr>
<tr>
<td></td>
<td>Divide numbers with up to 2 decimal places by 1-digit and 2-digit whole numbers, initially in practical contexts involving money and measures</td>
</tr>
<tr>
<td></td>
<td>Understand the relationship between unit, fractions and division</td>
</tr>
<tr>
<td></td>
<td>Recognise division calculations as the inverse of multiplication</td>
</tr>
<tr>
<td></td>
<td>Solve problems involving division</td>
</tr>
</tbody>
</table>

### Possible concrete and visual representation

- **Cuisenaire to represent scaling**
- **Arrays**

### Teacher Modelling/Children's Recording

**Children might use manipulatives alongside algorithms**

#### Short division

- \[ 564 \div 5 \]
  - \[ 1 \, \overline{12.8} \]
  - \[ 5 \, \underline{56} \, 4.0 \]
  - remainder as a decimal

#### Long division

- \[ 560 \div 24 \]

**See Appendix 1 – teaching short division with manipulatives**

#### Fluency

- Count backwards in steps of powers of 10 for any given number up to 1,000,000
- Count backwards with positive and negative whole numbers through zero
- Practise mental calculation with increasingly large numbers
- Apply all multiplication tables and related division facts frequently, commit them to memory and use them to confidently make larger calculations

#### Vocabulary: groups of, divided by, lots of, left over, quotient, divide, divisible by, factor, remainder, division, halve, half, share

- Practise division for larger numbers, using the normal written methods of short and long division
- Continue to use all multiplication tables and division facts to maintain fluency
- Perform mental calculations, including with mixed operations and larger numbers

#### Vocabulary: groups of, divided by, lots of, left over, quotient, divide, divisible by, factor, remainder, division, halve, half, share
Moving to written algorithms
Short Division – no exchange

\[
\begin{array}{c|ccc}
\div & 2 & 1 & 2 \\
3 & 6 & 3 & 6 \\
\end{array}
\]

Divide 6 hundreds into 3 equal groups
How many in each group?

Divide 3 tens into 3 equal groups
How many in each group?

Divide 6 ones into 3 equal groups
How many in each group?

Appendix 1
Moving to written algorithms
Short Division – with exchange

\[
\begin{array}{c}
\div \\
\hline
2 \ 1 \ 5 \\
\hline
3 \ 6 \ 4 \ 1 \ 5
\end{array}
\]

Divide 6 hundreds into 3 equal groups
How many in each group?

Divide 4 tens into 3 equal groups
How many in each group?
Exchange the remaining ten into ten ones

Divide 15 ones into 3 equal groups
How many in each group?