

# Darley Dene - Calculation Policy - Division

Key language: share, group, divide, divided by, half

## Year 1 Division

### Fluency

Count in twos, fives and tens from different multiples  
e.g. 6, 8, 10, 12 etc

Emphasise patterns

Double numbers and quantities

Find simple fractions of objects, numbers and quantities

### End of year expectations

$$O \div O$$

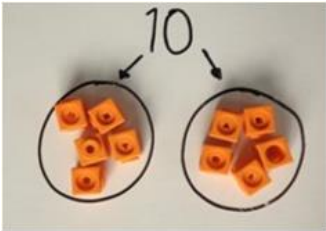
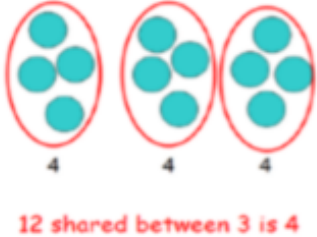
Use concrete objects and pictorial representations

Use the language of 'sharing *equally* between'

Find halves and then quarters

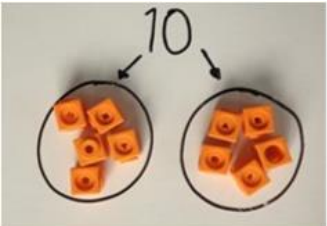
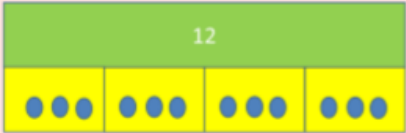
Understand division as grouping or sharing

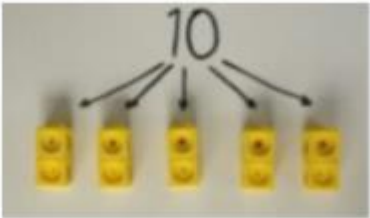

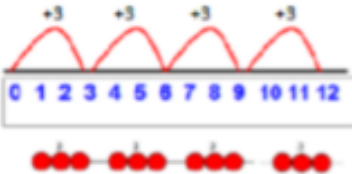
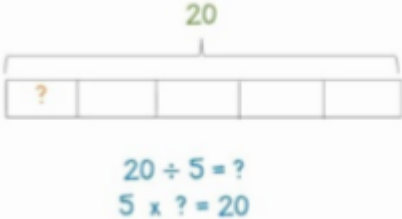
Solve single step practical problems involving division

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
<p><b>Division as sharing</b></p>	<p>I have 10 cubes, can you share them equally in 2 groups?</p> 	<p>Children use pictures or shapes to share quantities</p> 	<p>12 shared between 3 is 4</p>

## Year 2 Division

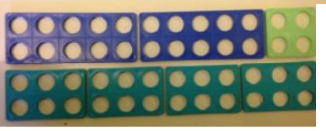
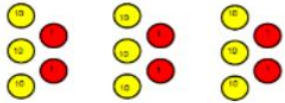

Fluency	End of year expectations
<p>Count back in twos, threes, fives from zero and tens from any number e.g. 12, 10, 8, 6 etc</p> <p>Emphasise patterns</p> <p>Connect ten times table to place value and five times table to divisions on a clock face</p> <p>Introduction to multiplication tables. Practise to become fluent in division facts for 2, 5 and 10</p> <p>Solve division problems involving grouping and sharing</p>	<p><math>0 \div 0</math> <math>10 \div 0</math></p> <p>Solve single step practical problems involving division</p> <p>Use concrete objects and pictorial representations</p> <p>Find halves and then quarters</p> <p>Understand division as grouping</p> <p>Work with a range of materials and contexts in which multiplication and division relate to grouping and sharing discrete quantities e.g. marbles, sweets, cherries and continuous quantities e.g. cakes, pizzas, chocolate bars and relate to fractions and measures</p> <p>Use inverse relations to develop multiplicative reasoning e.g <math>4 \times 5 = 20</math> and <math>20 \div 5 = 4</math></p>

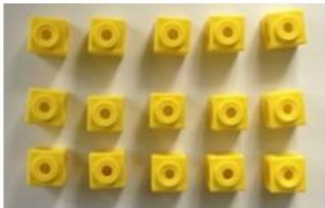
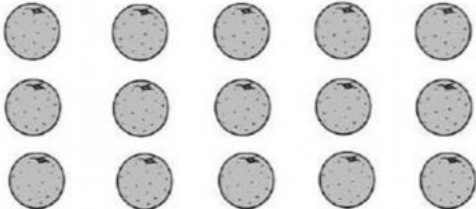
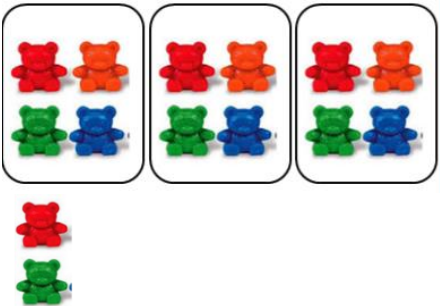

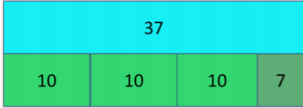
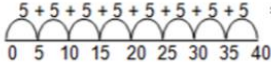
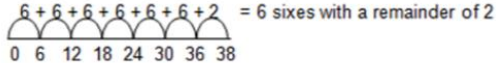
Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
<p><b>Division as sharing</b></p>	<p>I have 10 cubes, can you share them equally in 2 groups?</p> 	<p>Children use bar modelling to show and support understanding.</p> 	<p><math>12 \div 4 = 3</math></p>

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
<p><b>Division as grouping</b></p>	<p>Divide quantities into equal groups. Use cubes, counters, objects or place value counters to aid understanding.</p>  	<p>Use number lines for grouping</p>  <p>Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.</p> 	<p><math>12 \div 3 = 4</math></p> <p>Divide 12 into 3 groups. How many are in each group?</p>

## Year 3 Division

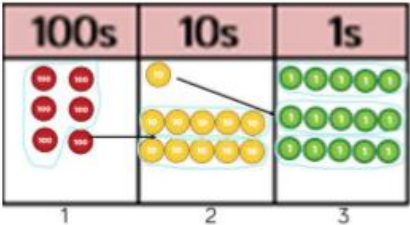
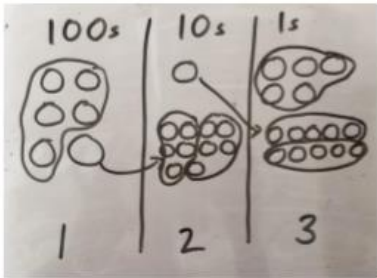
<b>Fluency</b>	<b>End of year expectations</b>
<p>Recall and use related division facts for the 3, 4 and 8x tables (Continue to practise other tables previously learnt)</p> <p>Write and calculate mathematical statements for division using what is known</p> <p>Use division facts to derive related division facts e.g. using <math>6 \div 3 = 2</math> to work out <math>60 \div 3 = 20</math></p>	<p><math>TO \div O</math></p> <p>Develop a reliable written method for division</p> <p>Solve problems involving missing numbers</p> <p>Solve problems including those that involve scaling e.g There are 2 sunflowers. One is 120cm tall. The other is 3 times smaller. What is its length?</p> <p>Recognise, find and name <math>\frac{1}{2}</math> and <math>\frac{1}{4}</math> of an object, shape or quantity Understand the link between unit fractions and division</p> <p>Connect <math>\frac{1}{10}</math> to division by 10</p> <p>Count in tenths</p>

<b>Objective and strategy</b>	<b>Concrete (build it)</b>	<b>Pictorial (draw it)</b>	<b>Abstract (write it)</b>
<p><b>Division as grouping</b></p>	<p>Use cubes, counters, objects or place value counters to aid understanding. 24 divided into groups of six = 4</p> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <math>96 \div 3 = 32</math> </div> </div> <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;">  </div>	<p>Continue to use bar modelling to aid solving division problems.</p> <div style="text-align: center; margin: 10px 0;">  </div> <div style="text-align: center; color: #00aaff;"> <math>20 \div 5 = ?</math>  <math>5 \times ? = 20</math> </div>	<p>How many groups of 6 in 24?</p> <p><math>24 \div 6 = 4</math></p>

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
<p><b>Division with arrays</b></p>	<p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p> <p>Eg <math>15 \div 3 = 5</math>   <math>5 \times 3 = 15</math>  <math>15 \div 5 = 3</math>   <math>3 \times 5 = 15</math></p> 	<p>Draw an array and use lines to split the array into groups to make multiplication and division sentences</p> 	<p>Find the inverse of multiplication and division sentences by creating eight linking number sentences.</p> <p><math>7 \times 4 = 28</math>  <math>4 \times 7 = 28</math>  <math>28 \div 7 = 4</math>  <math>28 \div 4 = 7</math>  <math>28 = 7 \times 4</math>  <math>28 = 4 \times 7</math>  <math>4 = 28 \div 7</math>  <math>7 = 28 \div 4</math></p>
<p><b>Division with remainders.</b></p>	<p><math>14 \div 3 =</math>          Divide objects between groups and see how much is left over</p> 	<p>Draw dots and group them to divide an amount and clearly show a remainder. <math>14 \div 3 =</math></p>  <p>Use bar models to show division with remainders</p>  <p><b>Example without remainder:</b>  <math>40 \div 5</math>          Ask "How many 5s in 40?" <math>5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 8</math> fives</p>  <p><b>Example with remainder:</b>  <math>38 \div 6</math></p>  <p>For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts.</p>	<p>Complete written divisions and show the remainder using r.</p>

## Year 4 Division

<b>Fluency</b>	<b>End of year expectations</b>
<p>Continue to practise recalling division facts for multiplication tables up to 12 x 12</p> <p>Practise mental methods and extend this to three-digit numbers for example <math>200 \times 3 = 600</math> into <math>600 \div 3 = 200</math></p> <p>Use place value, known and derived facts to divide mentally, including dividing by 1</p> <p>Recognise and use factor pairs and commutativity in mental calculations</p>	<p><math>TO \div O</math> <math>HTO \div O</math></p> <p>Become fluent in the formal written method of short division with exact answers when dividing by a one-digit number</p> <p>Divide one- or two-digit numbers by 10 or 100, identifying value of digits as tenths or hundredths</p> <p>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</p>

<b>Objective and strategy</b>	<b>Concrete (build it)</b>	<b>Pictorial (draw it)</b>	<b>Abstract (write it)</b>
<b>Short division</b>	<p>Use place value counters to group.      <math>615 \div 5</math></p> <div style="text-align: center;">  </div> <ol style="list-style-type: none"> <li>1. Make 615 with place value counters.</li> <li>2. How many groups of 5 hundreds can you make with 6 hundred counters?</li> <li>3. Exchange 1 hundred for 10 tens.</li> <li>4. How many groups of 5 tens can you make with 11 ten counters?</li> <li>5. Exchange 1 ten for 10 ones.</li> <li>6. How many groups of 5 ones can you make with 15 ones?</li> </ol>	<p>Represent the place value counters pictorially.</p> <div style="text-align: center;">  </div>	<p>Children to the calculation using the short division scaffold.</p> <div style="text-align: center; font-family: monospace; font-size: 1.2em;"> <math display="block">  \begin{array}{r}  123 \\  5 \overline{) 615} \\  \underline{5 \phantom{00}} \\  11 \phantom{0} \\  \underline{10 \phantom{0}} \\  15 \\  \underline{15} \\  0  \end{array}  </math> </div>

## Year 5 Division

Fluency	End of year expectations
<p>Count backwards in steps of powers of 10 for any given number up to 1 000 000</p> <p>Count backwards with positive and negative whole numbers through zero</p> <p>Practise mental calculation with increasingly large numbers</p> <p>Apply all multiplication tables and related division facts frequently, commit them to memory and use them to confidently to make larger calculations</p>	<p>Th H TO <math>\div</math> O HTO <math>\div</math> O</p> <p>Identify factors , including finding all factor pairs of a number, and common factors of two numbers</p> <p>Practise and extend the formal written method of short division: numbers up to four-digits by a one-digit number</p> <p>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</p> <p>Divide whole numbers and those that involve decimals by 10, 100 and 1000.</p> <p>Use multiplication and division as inverses</p> <p>Solve problems involving division including scaling and their knowledge of factors, multiples, squares and cubes</p>

Objective and strategy	Concrete (build it)	Pictorial (draw it)	Abstract (write it)
<b>Short division</b>	The same as Year 4 but with up to 4 digits	The same as Year 4 but with up to 4 digits	The same as Year 4 but with up to 4 digits

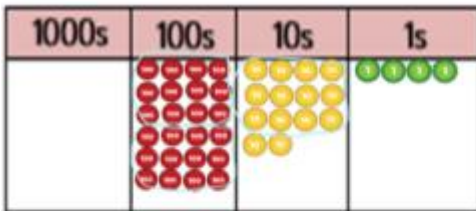
## Year 6 Division

<b>Fluency</b>	<b>End of year expectations</b>
<p>Practise division for larger numbers, using the formal written methods of short and long division</p> <p>Continue to use all multiplication tables and division facts to maintain fluency</p> <p>Perform mental calculations, including with mixed operations and larger numbers</p>	<p>Th HTO <math>\div</math> TO HTO <math>\div</math> TO</p> <p>Divide numbers up to four-digits by a two-digit whole number using the formal written methods of long division, and interpret remainders as whole numbers, fractions or by rounding, as appropriate for the context</p> <p>Divide numbers with up to two decimal places by one-digit and two-digit whole numbers, initially in practical contexts involving money and measures</p> <p>Understand the relationship between unit fractions and division</p> <p>Recognise division calculations as the inverse of multiplication</p> <p>Solve problems involving division</p>

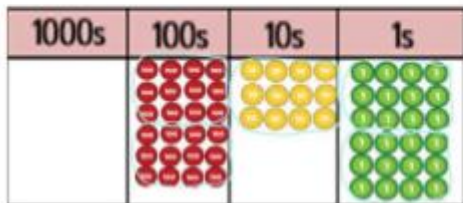
<b>Objective and strategy</b>	<b>Concrete (build it)</b>	<b>Pictorial (draw it)</b>	<b>Abstract (write it)</b>																
<b>Long division</b>	<p>Use place value counters. <math>2544 \div 12</math></p> <div style="display: flex; align-items: flex-start;"> <table border="1" style="border-collapse: collapse; text-align: center; margin-right: 10px;"> <tr><th style="padding: 2px;">1000s</th><th style="padding: 2px;">100s</th><th style="padding: 2px;">10s</th><th style="padding: 2px;">1s</th></tr> <tr><td style="padding: 2px;">●●</td><td style="padding: 2px;">●●●●●●</td><td style="padding: 2px;">●●●●●●</td><td style="padding: 2px;">●●●●●●</td></tr> </table> <div style="margin-right: 10px;"> <p>We can't group 2 thousands into groups of 12 so will exchange them.</p> </div> <table border="1" style="border-collapse: collapse; text-align: center; margin-right: 10px;"> <tr><th style="padding: 2px;">1000s</th><th style="padding: 2px;">100s</th><th style="padding: 2px;">10s</th><th style="padding: 2px;">1s</th></tr> <tr><td style="padding: 2px;"></td><td style="padding: 2px;">●●●●●●●●●●●●●●●●</td><td style="padding: 2px;">●●●●●●</td><td style="padding: 2px;">●●●●●●</td></tr> </table> <div> <p>We can group 24 hundreds into groups of 12 which leaves with 1 hundred.</p> </div> </div>	1000s	100s	10s	1s	●●	●●●●●●	●●●●●●	●●●●●●	1000s	100s	10s	1s		●●●●●●●●●●●●●●●●	●●●●●●	●●●●●●	<p>Represent the place value counters pictorially.</p>	$\begin{array}{r} 02 \\ 12 \overline{) 2544} \\ \underline{24} \phantom{00} \\ 1 \phantom{00} \end{array}$
1000s	100s	10s	1s																
●●	●●●●●●	●●●●●●	●●●●●●																
1000s	100s	10s	1s																
	●●●●●●●●●●●●●●●●	●●●●●●	●●●●●●																



**Long  
division  
continued**



After exchanging the hundred, we have 14 tens. We can group 12 tens into a group of 12, which leaves 2 tens.



After exchanging the 2 tens, we have 24 ones. We can group 24 ones into 2 group of 12, which leaves no remain

Represent the place value counters pictorially.

$$\begin{array}{r}
 021 \\
 12 \overline{) 2544} \\
 \underline{24} \phantom{00} \\
 14 \phantom{00} \\
 \underline{12} \phantom{00} \\
 2
 \end{array}$$

$$\begin{array}{r}
 0212 \\
 12 \overline{) 2544} \\
 \underline{24} \phantom{00} \\
 14 \phantom{00} \\
 \underline{12} \phantom{00} \\
 24 \phantom{00} \\
 \underline{24} \phantom{00} \\
 0
 \end{array}$$