

CALCULATION POLICY: DIVISION

The policy gives an outline of the small steps of progression matched to the expectations for each year group according to the new 2014 National Curriculum. Some examples are included and further ones can be added to your document.

Concrete objects as models, such as cubes, counters, Dienes blocks, Cuisenaire rods and Numicon need to be used to help children gain conceptual understanding, supported by images such as number lines and 100 squares to develop mental pictures as a step from counting to calculation. Fluency in mental strategies and quick recall of facts need to be established before using a formal written method, but informal jottings and a recorded mental method can help bridge the mental and written methods so that each stage of the chosen written method is understood.

Year 1

Division steps	Example
Group objects into twos to divide	<i>Here are 12 counters. Put them into groups of 2. How many groups are there?</i>
Group objects into 2s, 3s, 4s etc and count groups to divide – repeated subtraction	<i>How many 2p coins make 20p? Put these 20 animals in groups of 5. How many groups did you make? Show me how you did it.</i>

Year 2

Division steps	Example
Understand the \div sign as 'divided by' and 'groups of' $12 \div 3 = 4$ groups of 3	<i>Show me on a number line how you could do: $14 \div 2$, $15 \div 3$, $20 \div 5$ 15 pencils are grouped in threes. How many groups are there? Explain how you worked it out.</i>
Halve numbers to 20	<i>I'm thinking of a number. If I halve it my answer is 9. What number was I thinking of? Explain how you know. Is this the same as $18 \div 2 = 9$?</i>
Understand the inverse relationship between multiplication and division	<i>What multiplication and division facts can you make from the numbers 2, 8 and 16?</i>
Understand that division is not commutative	<i>Is it always, sometimes or never true that $10 \div 2$ gives the same answer as $2 \div 10$? Show me how you know</i>
Develop quick recall of division facts for 2, 5 and 10	<i>Which tables facts help you to work out 30 divided by 5?</i>
Use practical methods to divide with remainders	<i>I have 22 counters here that I want to divide equally between 5 children. Show me what $22 \div 5$ means with these counters.</i>
Calculate the value of a missing number in a number sentence	<i>What are the missing numbers? $\square \times 2 = 12$ $20 \div \square = 4$ $\square \div 2 = 10$ How do you know?</i>

Year 3

Division steps	Example
Develop quick recall of division facts for 3 and 4	<i>I am thinking of a number. I divide it by 4 and the answer is 8. What is my number?</i>
Use practical and informal methods to divide 2-digit numbers by 2, 3, 4, 5	<i>Answer this: $65 \div 5 = \square$</i> <i>Explain how you solved this.</i> <i>You are given that $10 \times 3 = 30$ and $3 \times 3 = 9$. How many threes are there in 39?</i>
Use a written method for $TU \div U$, rounding remainders up or down	<i>35 crayons are shared fairly into three pots. How many crayons are in each pot? How did you decide on your answer?</i>
Develop quick recall of division facts for 6 and 8	<i>What is $24 \div 6$? Can we check this with a multiplication?</i>

Year 4

Division steps	Example
Develop quick recall of division facts for 11 and 12	<i>If you know that $80 \div 10 = 8$, how can you use this to help learn $96 \div 8$?</i>
Know all division facts by using the multiplication facts to 12x12	<i>Which division facts do you still need to learn? What strategies could you use to learn them?</i>
Divide by multiples of 10 mentally	<i>What is 300 divided by 30? How did you work it out?</i>
Use known facts to find unknown facts	<i>What is half of 72? How did you work it out? Is there a different way to do it? What is half of 720? Half of 7200? How do you know?</i>
Use a written method for $HTU \div U$, including remainders	<p><i>What is 168 divided by 3? Estimate: $180 \div 3 = 60$</i></p> $ \begin{array}{r} \underline{56} \\ 3 \overline{) 168} \\ \underline{150} \quad (50 \times 3) \\ 18 \\ \underline{18} \quad (6 \times 3) \\ 00 \\ \hline 168 \div 3 = 56 \end{array} $

Year 5

Division steps	Example
Use a written method for ThHTU \div U, including remainders	<p>How many 5s in 1382?</p> $\begin{array}{r} 276r2 \\ 5 \overline{) 1382} \end{array}$
Use tests of divisibility to recognise multiples of 2, 3, 4, 5, 6, 8, 9 and 10	<p>Explain the rule of divisibility for multiples of 6. How do you know if 414 is a multiple of 6?</p>
Solve scaling problems, including those involving rates	<p>A car is drawn at a scale of 1:50. If the actual car is 3m 50cm in length, what is the length of the drawn car?</p>
Interpret remainders in division as whole numbers, fractions or by rounding	<p>A farmer collects 349 eggs and puts them into egg boxes that hold 6 eggs. All the eggs must be in an egg box. How many egg boxes will he need?</p> <p>A group of 5 people win a prize of £6142 and share it between them. How much do they each get?</p>

Year 6

Division steps	Example																																			
Factorise numbers to help divide	<i>How can you use factors to divide 96 by 12?</i>																																			
Know the order of operations to calculate with brackets	<p><i>Answer these:</i></p> $(17 \times 4) + (121 \div 11) =$ $(8 + 3) \times (81 \div 9) =$																																			
Use a written method for ThHTU \div TU, including remainders	<i>Show the method you would use to divide 1749 by 16.</i>																																			
Calculate and interpret the mean as an average	<p><i>Carol counts the matches in 10 boxes. She works out that the mean number of matches in a box is 51. Here are her results for 9 boxes.</i></p> <table border="1"> <thead> <tr> <th colspan="7">Number of matches in a box</th> </tr> <tr> <th>48</th> <th>49</th> <th>50</th> <th>51</th> <th>52</th> <th>53</th> <th>54</th> </tr> </thead> <tbody> <tr> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td>✓</td> </tr> <tr> <td></td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> <td>✓</td> </tr> <tr> <td></td> <td>✓</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p><i>Calculate how many matches are in the tenth box.</i></p>	Number of matches in a box							48	49	50	51	52	53	54		✓	✓	✓	✓		✓		✓	✓				✓		✓					
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Use a written division method for money and measures with an answer up to two decimal places	<i>A piece of wood is 3.25 m long. I use all the wood to make five shelves of equal length. How long is each shelf in metres? In centimetres?</i>																																			
Use diagrams to help divide proper fractions by whole numbers	<i>Show me how you could answer $\frac{1}{2} \div \frac{1}{4}$</i>																																			