

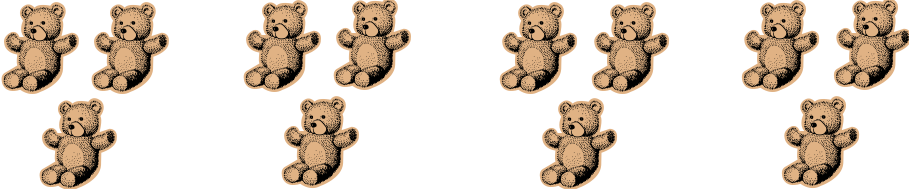

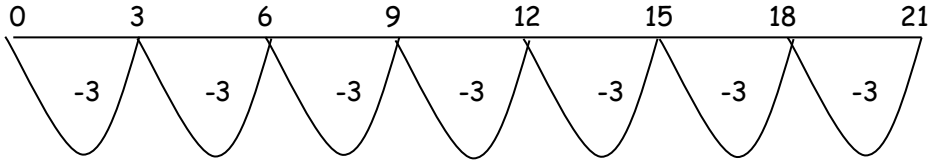
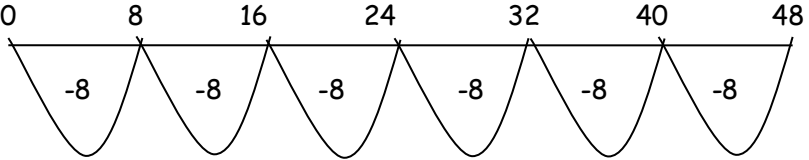


## Division

End of Year Expectations	Teacher modelling / Children's recording	Fluency
<p style="text-align: center;"><u>Year 1</u></p> <p><math>U \div U</math></p> <p>Use concrete objects, pictorial representations</p> <p>Use the language of 'sharing equally between'</p> <p>Find halves and then quarters</p> <p>Understand division as grouping or sharing</p> <p>Solve single step practical problems involving division</p>	<p>Practical only e.g. link to small world</p> <p>Using concrete objects, pictorial representations and arrays with the support of an adult - take photographs/draw pictures - if using Numicon small icons could be stuck in</p> <p>Through <b>grouping</b> and <b>sharing</b> small quantities pupils should begin to understand the concept of division.</p> <p><i>Eight can be divided into four equal groups of 2</i></p>   <p><i>Twelve can be shared equally by 4 people and they would have 3 each</i></p> 	<p>Count in twos, fives and tens from different multiples e.g. 6, 8, 10, 12 etc</p> <p>Emphasise patterns</p> <p>Double numbers and quantities</p> <p>Find simple fractions of objects, numbers and quantities</p>

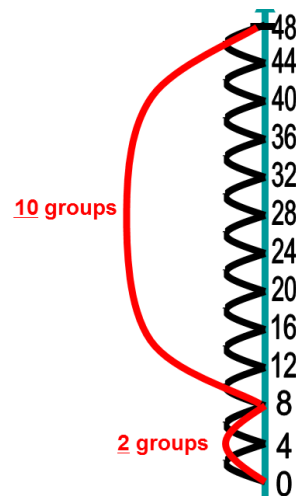
End of Year Expectations	Teacher modelling / Children's recording	Fluency
<p style="text-align: center;"><u>Year 2</u></p> <p><math>U \div U</math> <math>TU \div U</math></p> <p>Solve single step practical problems involving division</p> <p>Use concrete objects, pictorial representations</p> <p>Find 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>	<p><b>Children should recall and use division facts for the 2s, 5s and 10 x tables.</b></p> <p><b>Record divisions as number sentences using <math>\div</math> and =</b></p> <p><b>Recognise that division is non-commutative (cannot be done in any order)</b></p> <p><math>8 \div 4 =</math> (using practical resources and real life contexts) Eight divided into four equal groups = two in each group</p> <p>Children should also move onto calculations involving remainders.</p> <p><math>13 \div 4 =</math></p>  <p><math>13 \div 4 = 3</math> remainder 1</p> <p>The method of repeated subtraction on a number line could also be used to teach this concept. Note: when subtracting on a number line the jumps should go underneath.</p> <p><math>21 \div 3 = 7</math></p> 	<p>Count back in twos, threes, fives from zero and tens from any number e.g. 12, 10, 8, 6 etc 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>

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<p style="text-align: center;"><u>Year 3</u></p> <p>TU ÷ U</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 1/10 to division by 10 Count in tenths</p>	<p><b>Emphasis on division facts for 3s, 4s and 8 x tables.</b> <b>Solve a variety of problems</b></p> <p>Repeated subtraction on a number line (horizontal or vertical).</p> <p><math>48 \div 8 = 6</math></p>  <p>Children need to be able to decide what to do with remainders after division and round up or down accordingly. They should make sensible decisions about rounding up or down after division. For example <math>62 \div 8</math> is 7 remainder 6, but whether the answer should be rounded up to 8 or rounded down to 7 depends on the context.</p> <p>e.g. I have 62p. Sweets are 8p each. How many can I buy? Answer: 7 (the remaining 6p is not enough to buy another sweet)</p> <p>Apples are packed into boxes of 8. There are 62 apples. How many boxes are needed? Answer: 8 (the remaining 6 apples still need to be placed into a box)</p>	<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>

Before starting the more formal written method of 'chunking', children should first use the repeated subtraction on a vertical number line.

$$48 \div 4 = 10 \text{ (groups of 4)} + 2 \text{ (groups of 4)}$$

$$= 12 \text{ (groups of 4)}$$



Repeated subtraction - Chunking  $78 \div 8 = 9 \text{ r } 6$

$$\begin{array}{r}
 8 \quad | \quad 78 \\
 \underline{(8 \times 8) - 64} \\
 14 \\
 \underline{(1 \times 8) - 8} \\
 6
 \end{array}$$

**Key Facts Box**

$$2 \times 8 = 16$$

$$4 \times 8 = 32$$

$$8 \times 8 = 64$$

$$10 \times 8 = 80$$

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<p style="text-align: center;"><u>Year 4</u></p> <p>TU ÷ U HTU ÷ U</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>	<p>Chunking leading to short division (with no remainders) when confident. 72 ÷ 6 = 12</p> $\begin{array}{r} 12 \\ 6 \overline{) 72} \end{array}$ <p>560 ÷ 4 = 140</p> $\begin{array}{r} 140 \\ 4 \overline{) 560} \end{array}$ <p>When dividing numbers by 10 or 100 use place value mats and dienes e.g 23÷10= First make 23 using dienes and place 2 ten rods and 3 units onto the place value mat. Then move the 'digits' one place to the right (10x smaller) and exchange dienes for 2 units and 3 tenths (straws).</p>	<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 200 x 3 = 600 into 600 ÷ 3 = 200</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>

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<p style="text-align: center;"><u>Year 5</u></p> <p>Th H TU ÷ U HTU ÷ U</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>	<p><b>Revise short division skills</b> <b>Extending to 4 digit numbers</b> <b>Interpreting remainders appropriately for the context.(fractions and decimals)</b></p> <p><b>Short division without a remainder</b> <math>560 \div 4 = 140</math></p> $  \begin{array}{r}  140 \\  4 \overline{) 560} \\  \underline{4} \phantom{0} \\  16 \phantom{0} \\  \underline{16} \phantom{0} \\  0  \end{array}  $ <p><b>Short division where the remainder is a decimal</b> <math>564 \div 5 = 112.8</math></p> $  \begin{array}{r}  112.8 \\  5 \overline{) 564.0} \\  \underline{5} \phantom{0} \\  6 \phantom{0} \\  \underline{5} \phantom{0} \\  14 \phantom{0} \\  \underline{14} \phantom{0} \\  0  \end{array}  $ <p><b>Short division where the remainder is a fraction</b> <math>564 \div 5 = 112 \frac{4}{5}</math></p> $  \begin{array}{r}  112 \text{ r } 4/5 \\  5 \overline{) 564.} \\  \underline{5} \phantom{.} \\  6 \phantom{.} \\  \underline{5} \phantom{.} \\  14 \phantom{.} \\  \underline{14} \phantom{.} \\  4  \end{array}  $	<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>

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<p style="text-align: center;"><u>Year 6</u></p> <p>Th HTU ÷ TU HTU ÷ TU</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>	<p><b>Use the formal written method of long division and interpret remainders appropriately for the context (fractions, decimals or by rounding)</b></p> <p><b>Use short division when dividing a 2 digit number where appropriate.</b></p> <p><b>Long division</b></p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>432 ÷ 15 becomes</p> <math display="block">\begin{array}{r} 28 \text{ r } 12 \\ 15 \overline{) 432} \\ \underline{300} \\ 132 \\ \underline{120} \\ 12 \end{array}</math> <p>Answer: 28 remainder 12</p> </div> <div style="text-align: center;"> <p>432 ÷ 15 becomes</p> <math display="block">\begin{array}{r} 28 \\ 15 \overline{) 432} \\ \underline{300} \quad 15 \times 20 \\ \underline{132} \\ 120 \\ \underline{120} \quad 15 \times 8 \\ 0 \end{array}</math> <p><math>\frac{12}{15} = \frac{4}{5}</math></p> <p>Answer: <math>28 \frac{4}{5}</math></p> </div> <div style="text-align: center;"> <p>432 ÷ 15 becomes</p> <math display="block">\begin{array}{r} 28.8 \\ 15 \overline{) 432.0} \\ \underline{300} \quad \downarrow \\ \underline{132} \quad \downarrow \\ \underline{120} \quad \downarrow \\ 120 \\ \underline{120} \\ 0 \end{array}</math> <p>Answer: 28.8</p> </div> </div>	<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>

By the end of year 6, children will have a range of calculation methods, mental and written. Selection will depend upon the numbers involved.

Children should not be made to go onto the next stage if:

- they are not ready.
- they are not confident.

Children should be encouraged to consider if a mental calculation would be appropriate before using written methods.

The decision making process of which method to use in order to answer a question most effectively:

- 1 - Can I do it in my head?
- 2 - Do I need to use a jotting?
- 3 - Do I need to use a written method?