
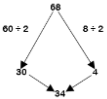
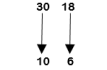

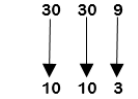
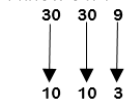
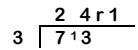
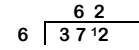



# Division KS2

<b>KS1</b>	<p>Noticing how counting in multiples of 2, 5 and 10 relates to the number of groups you have counted (introducing times tables) links to division.</p> <p>An understanding of the more you share between, the less each person will get (e.g. would you prefer to share these grapes between 2 people or 3 people? Why?)</p> <p>Secure understanding of grouping means you count the number of groups you have made. Whereas sharing means you count the number of objects in each group.</p>			
<b>Year</b>	<b>3</b>		<b>4</b>	
Developing Conceptual/ Procedural Understanding	<p><b>Links to tables</b></p>  <p>For example, use language of division linked to tables using counting stick</p> <p><b>Using known facts</b> 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> <p><b>Partitioning strategy to halve</b> Halve 68</p>  <p><b>Rearranging the dividend to find multiples of the divisor.</b> <math>48 \div 3 =</math> 'What do I know about the 3 x tables?' 'I know <math>3 \times 10 = 30</math> and <math>3 \times 6 = 18</math>.'</p>  <p><math>48 \div 3 = 16</math></p>	<p><b>Place value materials to represent calculations</b></p> <p><b>Representing problems</b> Andy says 'I can use my three times table to work out <math>180 \div 3</math>'. Explain what Andy could do to work out this calculation.</p>	<p><b>Links to tables</b></p>  <p>For example, use language of division linked to tables using counting stick</p> <p><b>Short division</b> <math>72 \div 3 =</math></p>  <p>'72 divided by 3. 7 tens shared equally between 3 is 2 with a remainder of 1 ten. Exchange the 1 ten for 10 units. I now have 12 units which shared equally between 3 is 4. The answer is 24.'</p> <p><b>Using known facts</b> If <math>2 \times 3 = 6</math> then <math>200 \times 3 = 600</math> and <math>600 \div 3 = 200</math></p> <p><b>Rearranging the dividend to find multiples of the divisor.</b> <math>69 \div 3 =</math> 'What do I know about the 3 x tables?' 'I know <math>3 \times 10 = 30</math> and <math>3 \times 3 = 9</math>.'</p>  <p><math>69 \div 3 = 23</math></p> 	<p><b>Place value materials to represent calculations</b></p> <p><b>Short division</b> <math>372 \div 6 =</math></p>  <p>'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.'</p> <p><b>Representing problems</b> Alan says that the solution to <math>186 \div 4</math> can be written as '46 remainder 2' or as '46.5'. Do you agree? Explain your answer.</p>
Known facts	Recall and use $\times$ and $\div$ facts for the 3, 4 and 8 x tables		Recall $\times$ and $\div$ facts for x tables up to 12 x 12.	
Essential knowledge	Review division facts (2 x, 5 x and 10 x tables)	Halve 2 digit numbers	Division facts (4x and 8x tables)	10x smaller
	Division facts (4 x table)	Division facts (3 x table)	Division facts (3 x, 6 x and 12 x tables)	Halve larger numbers and decimals
	Division facts (8 x table)	Division facts (6 x table)	Division facts (3 x and 9 x tables)	Division facts (11 x and 7 x tables)

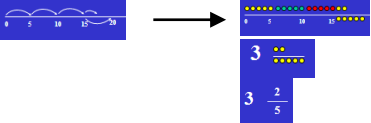

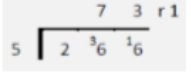
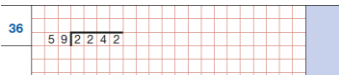
## Division KS2

Tests of divisibility	KS1: 2, 5, 10	Any number with a digit sum of a multiple of 3, will divide equally by 3	Any number with a digit sum of a multiple of 3, will divide equally by 3 KS1: 2, 5, 10	Any number with a digit sum of a multiple of 3 and is even will divide equally by 6
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## Division KS2

Year	5	6
<p>Layers of vocabulary</p>  <p><b>Appendix 1a</b> Beck's Tiers of Vocabulary <b>Appendix 1b:</b> Vocabulary book</p>	<p><b>Basic to subject specific (Beck's Tiers):</b> equal groups of divide, division, divided by, divided into remainder factor, quotient, divisible by inverse</p> <p><b>Instructional vocabulary:</b> calculate, work out, solve, investigate question, answer, check same, different missing number/s number facts, number pairs, number bonds greatest value, least value</p>	<p><b>Basic to subject specific (Beck's Tiers):</b> equal groups of divide, division, divided by, divided into remainder factor, quotient, divisible by inverse, remainders as fractions or decimals</p> <p><b>Instructional vocabulary:</b> calculate, work out, solve, investigate question, answer, check same, different missing number/s number facts, number pairs, number bonds greatest value, least value</p>
<p>NC 2014</p>	<p>Divide numbers up to 4 digits by a 1 digit number using the formal written method of short division and interpret remainders appropriately for the context (as remainders, as fractions, as decimals or by rounding, e.g. <math>98 \div 4 = 24 \text{ r}2 = 24 \frac{1}{2} = 24.5 \approx 25</math>).</p> <p>Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes. Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates.</p>	<p>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.</p> <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.</p> <p>Solve problems involving addition, subtraction, multiplication and division.</p>

# Division KS2

Developing Conceptual/ Procedural Understanding	<p><b>Using known facts</b>                  If <math>6 \div 2 = 3</math> then <math>6000 \div 2 = 3000</math> and <math>6000 \div 20 = 300</math></p> <p><b>Place value materials to represent calculations</b></p> <p><b>Short division</b>  <math>483 \div 7 =</math></p> $\begin{array}{r} 69r1 \\ 7 \overline{) 483} \end{array}$ <p>“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.”</p>	<p><b>Interpreting remainders</b>  <math>17 \div 5</math>                  “What do I know? 17 is not a multiple of 5.”</p>  <p><math>3 \frac{2}{5} = 3.4</math></p> <p>From knowledge of decimal/fraction equivalents or by converting <math>\frac{2}{5}</math> into <math>\frac{4}{10}</math>.</p> <p><b>Examples:</b></p> <p><math>17 \quad 581 \div 7 =</math></p>  <p><math>581 \div 7</math> could be calculated by the formal written method of short division or it could be calculated by rearranging the dividend, using known facts, into 560 and 21.</p> <p><b>Representing problems</b>                  Correct the errors in the calculation below. Explain the error. <math>266 \div 5 = 73.1</math></p> 	<p><b>Using known facts</b>                  If <math>6 \div 2 = 3</math> then <math>6 \div 0.2 = 30</math> and <math>6 \div 0.02 = 300</math></p> <p><b>Short division</b>  <math>97.6 \div 5 =</math></p> $\begin{array}{r} 19.52 \\ 5 \overline{) 97.6} \end{array}$ <p>“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.”</p> <p><b>Long division</b>                  (thinking not generally recorded)  <math>384 \div 16</math></p> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td>1</td><td>16</td></tr> <tr><td>2</td><td>32</td></tr> <tr><td>4</td><td>64</td></tr> <tr><td>5</td><td>80</td></tr> <tr><td>8</td><td>128</td></tr> <tr><td>10</td><td>160</td></tr> </table> <p>“What do I know about the divisor?”                  Record partial tables.</p> $\begin{array}{r} 24 \\ 16 \overline{) 384} \\ \underline{-32} \phantom{0} \\ 64 \\ \underline{-64} \\ 0 \end{array}$ <p>(38 tens <math>\div 16 = 2</math> r6; <math>2 \times 16 = 32</math>)                  (bring the 4 down)                  (64 units <math>\div 16 = 4</math>)                  (no remainder)</p>	1	16	2	32	4	64	5	80	8	128	10	160	 <p>With questions of this type where the divisor is close to a number linked to the times tables, encourage the children to use known facts and adjustment to set up the partial tables.</p> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td></td><td>60</td><td>Adjust <math>\rightarrow</math></td><td>59</td></tr> <tr><td></td><td>120</td><td></td><td>118</td></tr> <tr><td></td><td>240</td><td></td><td>236</td></tr> <tr><td></td><td>300</td><td></td><td>295</td></tr> <tr><td></td><td></td><td></td><td></td></tr> <tr><td></td><td>480</td><td></td><td>472</td></tr> <tr><td></td><td>600</td><td></td><td>590</td></tr> </table> <p><b>Representing problems</b>                  Megan divides 500 by 8 and gets the answer 62r4. She re writes it as <math>62 \frac{1}{2}</math>. Is she right? Explain your answer.</p> <p>Using factors to simplify long division</p> $25 \overline{) 815}$ $\begin{array}{r} 165 \\ 5 \overline{) 815} \\ \underline{80} \phantom{0} \\ 15 \\ \underline{-15} \\ 0 \end{array}$ <p>Simplify the fractions for remainders</p>		60	Adjust $\rightarrow$	59		120		118		240		236		300		295						480		472		600		590
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Known facts	Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Recall prime numbers up to 19	Identify common factors, common multiples and prime numbers																																										
Essential knowledge	Division facts (4 x and 8 x tables)	100, 1000 times smaller	Division facts up to $12 \times 12$	Halve larger numbers and decimals																																								
	Division facts (3 x, 6 x and 12 x tables; 3 x and 9 x tables)	Partition to divide mentally	Apply place value to derive division facts, e.g. $12 \div 3 = 4$ so $1.2 \div 3 = 0.4$	Partition to divide mentally including decimals																																								
	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	Tests for 2,3,5,6, 9 & 10	Any number where the last two digits are divisible by 4, will all divide by 4																																								