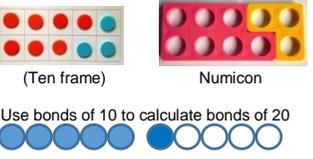
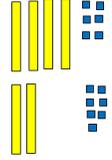
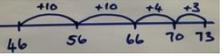
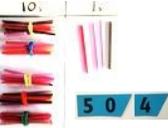
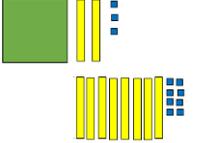
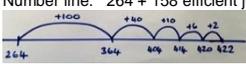
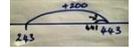
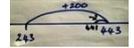
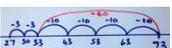
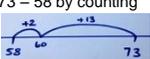
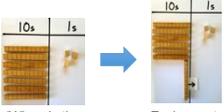
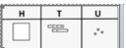
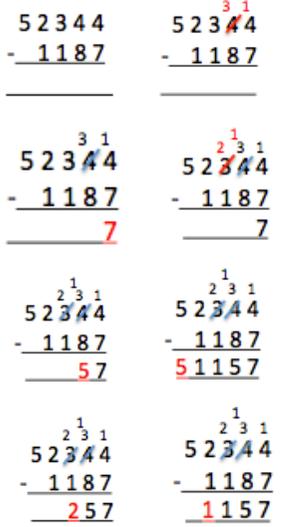


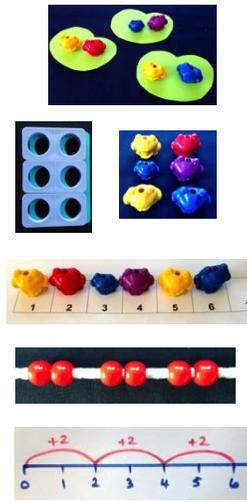
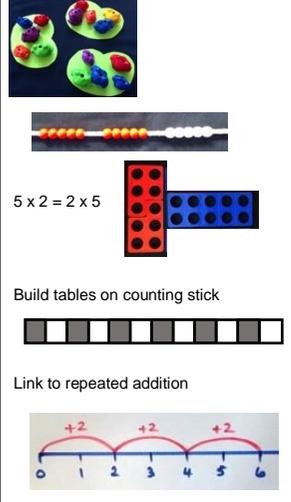
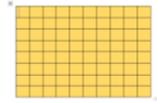
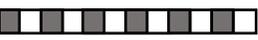
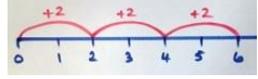
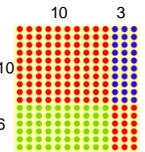
# Addition

Written Methods	Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs	Add and subtract two two-digit numbers using concrete objects, pictorial representations progressing to formal written methods $\begin{array}{r} 46 \\ + 27 \\ \hline 73 \end{array}$	Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction $\begin{array}{r} 123 \\ + 88 \\ \hline 211 \\ \hline 1 \end{array}$	Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate $\begin{array}{r} 2458 \\ + 596 \\ \hline 3054 \\ \hline 111 \end{array}$	Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
Developing conceptual understanding	<p>Number bonds</p>  <p>(Ten frame) Numicon</p> <p>Use bonds of 10 to calculate bonds of 20</p>  <p>Count all</p>  <p>Count on</p> <p>Count on, on number track, in 1s</p> 	<p>Partition and recombine</p> $46 + 27 = 60 + 13 = 73$  <p>46 + 27 = 73 Count in tens then bridge.</p>  <p>25 + 29 by +30 then -1 (Round and adjust)</p>  <p>24 + 10</p> 	<p>Partition and recombine</p> $423 + 88$  <p>Number line: 264 + 158 efficient jumps</p>  <p>40 + 80 = 120 using 4 + 8 = 12 So 400 + 800 = 1200</p>  <p>243 + 198 by +200 then -2 (Round and adjust)</p>  <p>Pairs that make 100 23 + 77 (Also with £, 10p and 1p)</p>	<p>Use of Base 10 where needed (see Year 3)</p> <p>Show 2458 and 596</p> $\begin{array}{r} 2458 \\ + 596 \\ \hline 3054 \\ \hline 111 \end{array}$	<p>Set out the calculation in columns.</p> <p>Find the sum of the 1s, 10s, 100s, 1000s &amp; 10,000s and record</p> $\begin{array}{r} 23454 \\ + 596 \\ \hline 0 \\ \hline 1 \end{array}$ $\begin{array}{r} 23454 \\ + 596 \\ \hline 50 \\ \hline 11 \end{array}$ $\begin{array}{r} 23454 \\ + 596 \\ \hline 050 \\ \hline 111 \end{array}$ $\begin{array}{r} 23454 \\ + 596 \\ \hline 4050 \\ \hline 111 \end{array}$ $\begin{array}{r} 23454 \\ + 596 \\ \hline 24050 \\ \hline 111 \end{array}$	
With jottings ... or in your head	Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	Add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <ul style="list-style-type: none"> <li>* a two-digit number and ones</li> <li>* a two-digit number and tens</li> <li>* two two-digit numbers</li> <li>* adding three one-digit numbers</li> </ul>	Add and subtract numbers mentally, including: <ul style="list-style-type: none"> <li>* a three-digit number and ones</li> <li>* a three-digit number and tens</li> <li>* a three-digit number and hundreds</li> </ul>	Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	Add and subtract numbers mentally with increasingly large numbers	Perform mental calculations, including with mixed operations and large numbers
Just know it!	Represent & use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero	Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
Year	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Foundations	1 more	10 more Number bonds: 20, 12, 13	Add multiples of 10, 100	Add multiples of 10s, 100s, 1000s	Add multiples of 10s, 100s, 1000s, tenths,	Add multiples of 10s, 100s, 1000s, tenths, hundredths
	Number bonds: 5, 6	Number bonds: 14, 15 Add 1 digit to 2 digit by bridging.	Add single digit bridging through boundaries	Fluency of 2 digit + 2 digit	Fluency of 2 digit + 2 digit including with decimals	Fluency of 2 digit + 2 digit including with decimals
	Largest number first. Number bonds: 7, 8	Partition second number, add tens then ones	Partition second number to add Pairs of 100	Partition second number to add Decimal pairs of 10 and 1	Partition second number to add	Partition second number to add
	Add 10. Number bonds: 9, 10	Add 10 and multiples. Number bonds: 16 and 17	Use near doubles to add	Use near doubles to add	Use number facts, bridging and place value	Use number facts, bridging and place value
	Ten plus ones. Doubles up to 10	Doubles up to 20 and multiples of 5 Add near multiples of 10.	Add near multiples of 10 and 100 by rounding and adjusting	Adjust both numbers before adding Add near multiples	Adjust numbers to add	Adjust numbers to add
	Use number bonds of 10 to derive bonds of 11	Number bonds: 18, 19 Partition and recombine	Partition and recombine	Partition and recombine	Partition and recombine	Partition and recombine

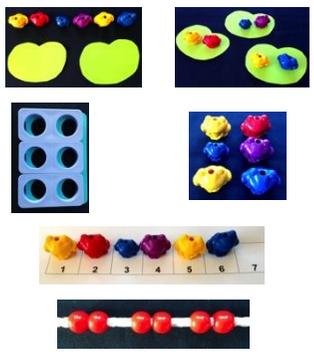
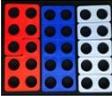
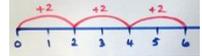
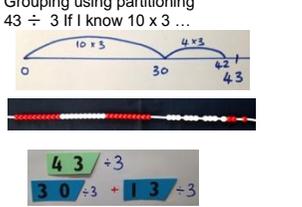
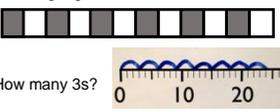
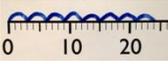
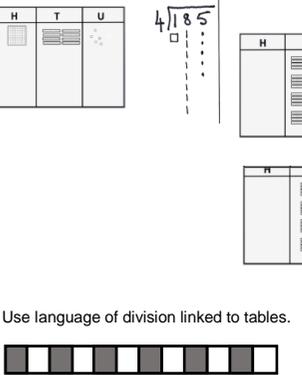
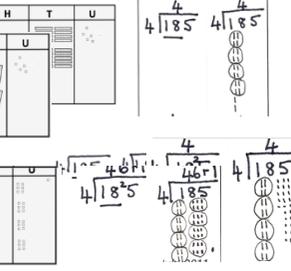
# Subtraction

<p><b>Written Methods</b></p>	<p>Read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs</p>	<p>Add and subtract two two-digit numbers using concrete objects, pictorial representations progressing to formal written methods</p> $\begin{array}{r} 6\ 1 \\ 7\ 3 \\ - 4\ 6 \\ \hline 2\ 7 \end{array}$	<p>Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction</p>	<p>Add and subtract numbers with up to 4 digits using the formal written methods of columnar addition where appropriate</p> $\begin{array}{r} 1 \\ 2\ 3\ 1 \\ 2\ 3\ 4 \\ - 1\ 8\ 7 \\ \hline 2\ 1\ 5\ 7 \end{array}$	<p>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</p>	<p>Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>
<p><b>Developing conceptual understanding</b></p>	<p>Number bonds</p>  <p>(Ten frame) Difference between 7 and 10</p> <p>6 less than 10 is 4</p>  <p>Count out, then count how many are left.</p> $7 - 4 = 3$  <p>Count back on a number track, then number line.</p> $15 - 6 = 9$  <p>Difference between 13 and 8</p> $13 - 8 = \underline{\quad}$ $8 + \underline{\quad} = 13$ 	<p>Using a number line, <math>73 - 46 = 26</math></p>  <p>Difference between 73 - 58 by counting up, <math>58 + \underline{\quad} = 73</math></p>  <p>Taking away and exchanging, <math>73 - 46</math></p>  <p>Where's the 'forty and six'?</p> <p>Exchange to create 'sixty thirteen'</p>  <p>'Twenty seven'</p> <p>'Now take away the forty and six'</p>	<p>Taking away and exchanging, <math>123 - 67 =</math></p>  $\begin{array}{r} 1\ 2\ 3 \\ - 6\ 7 \\ \hline \end{array}$  $\begin{array}{r} 1\ 1\ 2\ 1\ 3 \\ - 6\ 7 \\ \hline \end{array}$  $\begin{array}{r} 1\ 1\ 2\ 1\ 3 \\ - 6\ 7 \\ \hline 6 \end{array}$  $\begin{array}{r} 1\ 1\ 1\ 2\ 1\ 3 \\ - 6\ 7 \\ \hline 6 \end{array}$  $\begin{array}{r} 1\ 1\ 1\ 2\ 1\ 3 \\ - 6\ 7 \\ \hline 5\ 6 \end{array}$	<p>Use of Base Ten where appropriate.</p> <p>See worked examples from Year 3 and 5.</p>		
<p><b>With jottings ... or in your head</b></p>	<p>Solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as <math>7 = \square - 9</math></p>	<p>Add and subtract numbers using concrete objects, pictorial representations, and mentally, including:</p> <ul style="list-style-type: none"> <li>* a two-digit number and ones</li> <li>* a two-digit number and tens</li> <li>* two two-digit numbers</li> <li>* adding three one-digit numbers</li> </ul>	<p>Add and subtract numbers mentally, including:</p> <ul style="list-style-type: none"> <li>* a three-digit number and ones</li> <li>* a three-digit number and tens</li> <li>* a three-digit number and hundreds</li> </ul>	<p>Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why</p>	<p>Add and subtract numbers mentally with increasingly large numbers</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p>
<p><b>Just know it!</b></p>	<p>Represent and use number bonds and related subtraction facts within 20 Add and subtract one-digit and two-digit numbers to 20, including zero</p>	<p>Recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100</p>				
<p><b>Year</b></p>	<p><b>1</b></p>	<p><b>2</b></p>	<p><b>3</b></p>	<p><b>4</b></p>	<p><b>5</b></p>	<p><b>6</b></p>
<p><b>Foundations</b></p>	<p>1 less Number bonds, subtraction: 5, 6 Count back Number bonds, subtraction: 7, 8 Subtract 10. Number bonds, subtraction: 9, 10 Teens subtract 10. Difference between</p>	<p>10 less Number bonds, subtraction: 20, 12, 13 Number bonds, subtraction: 14, 15 Subtract 1 digit from 2 digit by bridging Partition second number, count back in 10s then 1s Subtract 10 and multiples of 10 Number bonds, subtraction: 16, 17 Subtract near multiples of 10 Difference between Number bonds, subtraction: 18, 19</p>	<p>Subtract multiples of 10 and 100 Subtract single digit by bridging through boundaries Partition second number to subtract Difference between Subtract near multiples of 10 and 100 by rounding and adjusting Difference between</p>	<p>Subtract multiples of 10s, 100s, 1000s Fluency of 2 digit subtract 2 digit Partition second number to subtract Decimal subtraction from 10 or 1 Difference between Subtract near multiples by rounding and adjusting Difference between</p>	<p>Subtract multiples of 10s, 100s, 1000s, tenths, Fluency of 2 digit - 2 digit including with decimals Partition second number to subtract Difference between Adjust numbers to subtract Difference between</p>	<p>Subtract multiples of 10s, 100s, 1000s, tenths, hundredths Fluency of 2 digit - 2 digit including with decimals Partition second number to subtract Use number facts bridging and place value Adjust numbers to subtract Difference between</p>

# Multiplication

Written Methods		Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication ( $\times$ ), division ( $\div$ ) and equals ( $=$ ) signs	Write and calculate mathematical statements for $\div$ using the $\times$ tables they know progressing to formal written methods.	Multiply two-digit and three-digit numbers by a one-digit number using formal written layout	Multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	Multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication																		
Developing conceptual understanding	<p>2 frogs on each lily pad.</p> 	<p>5 frogs on each lily pad <math>5 \times 3 = 15</math></p> 	<p>If I know <math>10 \times 8 = 80</math></p>  <p>So <math>13 \times 4 = 10 \times 4 + 3 \times 4</math></p>  <p>Build tables on counting stick</p>  <p>Link to repeated addition</p> 	<p><math>43 \times 6</math> by partitioning</p> <table border="1"> <tr> <td><math>\times</math></td> <td>40</td> <td>3</td> </tr> <tr> <td>6</td> <td>240</td> <td>18</td> </tr> </table> <p><math>43 \times 6 = 240 + 18 = 258</math></p> <p>If I know <math>4 \times 6 = 24</math> the <math>40 \times 60</math> is ten times bigger.</p> <p><math>13 \times 16</math> by partitioning</p>  <p><math>100 + 30 + 60 + 18 = 208</math> Build tables on counting stick</p> 	$\times$	40	3	6	240	18	<p>Grid method linked to formal written method</p> <table border="1"> <tr> <td><math>\times</math></td> <td>200</td> <td>40</td> <td>3</td> </tr> <tr> <td>30</td> <td>6000</td> <td>1200</td> <td>90</td> </tr> <tr> <td>6</td> <td>1200</td> <td>240</td> <td>18</td> </tr> </table> <p><math>7290 + 1458 = 8748</math></p>	$\times$	200	40	3	30	6000	1200	90	6	1200	240	18	<p>243</p> $\begin{array}{r} 243 \\ \times 36 \\ \hline 1458 \\ 7290 \\ \hline 8748 \\ 1 \end{array}$ <p>5172</p> $\begin{array}{r} 5172 \\ \times 38 \\ \hline 41376 \\ 196536 \\ 1 \end{array}$ <p>To multiply 5172 by 38 find the sum of <math>5172 \times 30</math> &amp; <math>5172 \times 8</math>.</p> <p><math>5172 \times 30</math>: This is the same as <math>5172 \times 3 \times 10</math>. Therefore, record a 0 in the 1s column to take care of the 'ten times bigger' and begin to calculate <math>5182 \times 3</math>.</p> <p>Then calculate 5172 multiplied by 8 and record beneath:</p> <p>Finally add the two parts together:</p>
$\times$	40	3																						
6	240	18																						
$\times$	200	40	3																					
30	6000	1200	90																					
6	1200	240	18																					
With jottings ... or in your head ....	Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot. Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods	Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers. Recognise and use factor pairs and commutativity in mental calculations	Multiply and divide numbers mentally drawing upon known facts. Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers. Establish whether a number up to 100 is prime.	Perform mental calculations, including with mixed operations and large numbers																		
Just know it!	Count in multiples of twos, fives and tens	Recall and use $\times$ and $\div$ facts for the 2, 5 and 10 $\times$ tables, including recognising odd and even numbers.	Recall and use $\times$ and $\div$ facts for the 3, 4 and 8 times tables.	Recall $\times$ and $\div$ facts for $\times$ tables up to $12 \times 12$ .	Recall prime numbers up to 19. Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. Recognise and use square numbers and cube numbers, and the notation for squared ( $^2$ ) and cubed ( $^3$ ).																			
Year	1	2	3	4	5	6																		
Foundations	Count in 2s	2 $\times$ table	Review 2x, 5x and 10x	4x, 8x tables 10 times bigger	4x, 8x tables 100, 1000 times bigger	Multiplication facts up to $12 \times 12$																		
	Count in 10s	10 $\times$ table	4x table	3x, 6x and 12x tables	3x, 6x and 12x tables 10, 100, 1000 times smaller	Partition to multiply mentally																		
	Doubles up to 10	Doubles up to 20 and multiples of 5	Double two digit numbers	Double larger numbers and decimals	Double larger numbers and decimals	Double larger numbers and decimals																		
	Count in 5s	5 $\times$ table	8 $\times$ table	3x, 9x tables	3x, 9x tables	Multiplication facts up to $12 \times 12$																		
	Double multiples of 10	Count in 3s	3 $\times$ table	11x, 7 $\times$ tables	11x, 7 $\times$ tables Partition to multiply mentally	Partition to multiply mentally																		
Count in 2s, 5s and 10s	2 $\times$ , 5 $\times$ and 10 $\times$ tables	6 $\times$ table or review others	6x, 12 $\times$ tables	6x, 12 $\times$ tables	Double larger numbers and decimals																			

# Division

<p><b>Written Methods</b></p>		<p>Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (x), division (÷) and equals (=) signs</p>	<p>Write and calculate mathematical statements for ÷ using the x tables they know progressing to formal written methods.</p>		<p>Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context</p> $194 \div 6 = 32 \text{ r } 2$ $192 \div 6 = 32$	<p>Divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context</p> $564 \div 13 = 43 \text{ r } 5$ <p><i>Known multiplication facts:</i> 13, 26, 39, 52, 65, ... 10 x 13 = 130, 20 x 13 = 260 ...</p> $13 \overline{) 564} = 43 \text{ r } 5$
<p><b>Developing conceptual understanding</b></p>	<p>6 ÷ 2 = 3 by sharing into 2 groups and by grabbing groups of 2</p>  <p>How many 2s?</p> 	<p>15 ÷ 3 = 5 in each group (sharing)</p>  <p>Link to fractions</p> <p>15 ÷ 3 = 5 groups of 3 (grouping)</p>  <p>10 ÷ 2 = 5</p>  <p>Use language of division linked to tables</p>  <p>How many 2s?</p> 	<p>Grouping using partitioning 43 ÷ 3 If I know 10 x 3 ...</p>  <p>Use language of division linked to tables</p>  <p>How many 3s?</p> 	 <p>Use language of division linked to tables.</p>	 <p>Use language of division linked to tables.</p>	<p>564 ÷ 13 = 43 r 5 = 43 <math>\frac{5}{13}</math></p> <p>Divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context</p> $564 \div 13 = 43 \text{ r } 5$ $13 \overline{) 564.00} = 43.38 \dots$ <p>= 43 r 5 = 43 <math>\frac{5}{13}</math> = 43.4 (to 1dp)</p>
<p><b>With jottings ... or in your head ...</b></p>	<p>Solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher</p>	<p>Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</p> <p>Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts</p>	<p>Write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental methods</p>	<p>Use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers</p> <p>Recognise and use factor pairs and commutativity in mental calculations</p>	<p>Multiply and divide numbers mentally drawing upon known facts</p> <p>Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000</p>	<p>Perform mental calculations, including with mixed operations and large numbers</p>
<p><b>Just know it!</b></p>	<p>Count in multiples of twos, fives and tens</p>	<p>Recall and use x and ÷ facts for the 2, 5 and 10 x tables, including recognising odd and even numbers.</p>	<p>Recall and use x and ÷ facts for the 3, 4 and 8 times tables</p>	<p>Recall x and ÷ facts for x tables up to 12 x 12.</p>	<p>Recall prime numbers up to 19 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p>	
<p><b>Year</b></p>	<p><b>1</b></p>	<p><b>2</b></p>	<p><b>3</b></p>	<p><b>4</b></p>	<p><b>5</b></p>	<p><b>6</b></p>
<p><b>Foundations</b></p>	<p>Count back in 2s</p> <p>Count back in 10s</p> <p>Halves up to 10</p> <p>Count back in 5s</p> <p>Halve multiples of 10</p> <p>How many 2s? 5s? 10s?</p>	<p>Division facts (2 x table)</p> <p>Division facts (10 x table)</p> <p>Halves up to 20</p> <p>Division facts (5 x table)</p> <p>Count back in 3s</p> <p>Review division facts (2x, 5x, 10x table)</p>	<p>Review division facts (2x, 5x, 10x table)</p> <p>Division facts (4 x table)</p> <p>Halve two digit numbers</p> <p>Division facts (8 x table)</p> <p>Division facts (3 x table)</p> <p>Division facts (6 x table) or review others</p>	<p>Division facts (4x, 8x tables) 10 times smaller</p> <p>Division facts (3x, 6 x, 12x tables)</p> <p>Halve larger numbers and decimals</p> <p>Division facts (3x, 9x tables)</p> <p>Division facts (11x, 7x tables)</p> <p>Division facts (6x, 12x tables)</p>	<p>Division facts (4x, 8x tables) 100, 1000 times smaller</p> <p>Division facts (3x, 6 x, 12x tables) Partition to divide mentally</p> <p>Halve larger numbers and decimals</p> <p>Division facts (3x, 9x tables) 100, 1000 times smaller</p> <p>Review division facts (11x, 7x tables) Partition decimals to divide mentally</p> <p>Review division facts (6x, 12x tables) Halve larger numbers and decimals</p>	<p>Division facts (up to 12 x 12)</p> <p>Partition to divide mentally</p> <p>Halve larger numbers and decimals</p> <p>Division facts (up to 12 x 12)</p> <p>Partition to divide mentally</p> <p>Halve larger numbers and decimals</p>

