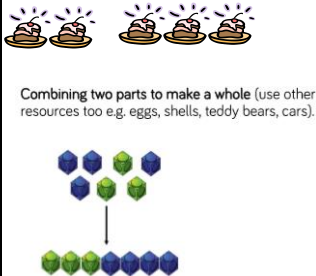

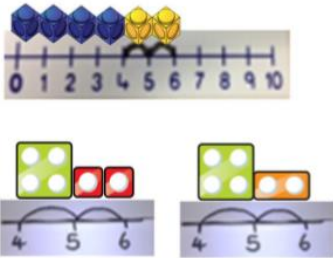
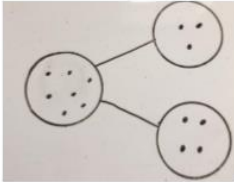
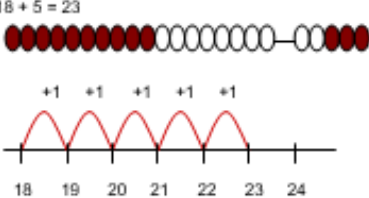

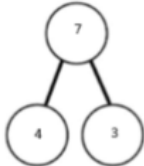
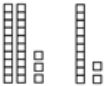
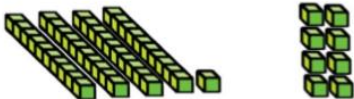
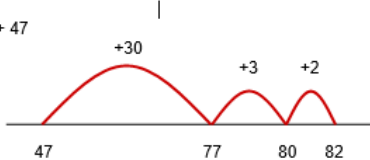



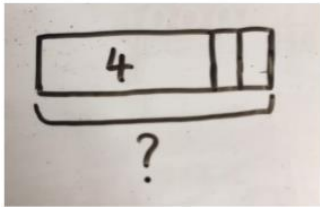
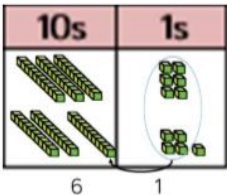
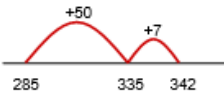
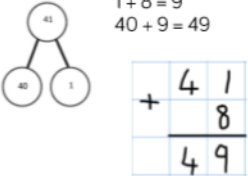


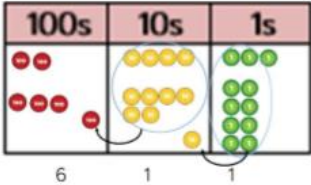
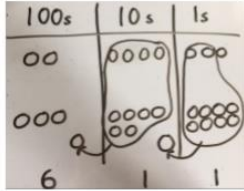
## Tintagel Primary School Written Calculation Policy – Updated March 2019

### ADDITION:


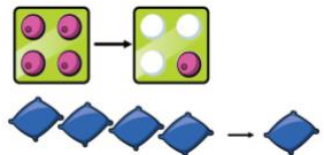



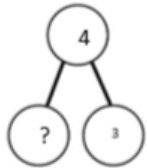
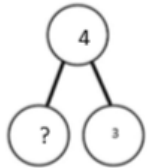
	CONCRETE	PICTORIAL	ABSTRACT	MENTAL RECALL	KEY VOCAB
<b>Reception</b>  <i>Addition as 'combining 2 groups'</i>	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> 40-60 Recognise some numerals of personal significance. • Recognises numerals 1 to 5. • Counts up to three or four objects by saying one number name for each item. • Counts actions or objects which cannot be moved. • Counts objects to 10, and beginning to count beyond 10. • Counts out up to six objects from a larger group. Selects the correct numeral to represent 1 to 5, then 1 to 10 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Uses the language of 'more' and 'fewer' to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations. Early Learning Goal Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.				
		8 people are on the bus. 5 more get on at the next stop. How many people are on the bus now?   [Might be recorded as: $8 + 5 = 13$ ]  Use of Numicon to support simple number sentences	Recording their own number sentences with the correct symbols e.g. $5 + 2 = 7$ OR $7 = 5 + 2$  (This can be done in a number of ways – chalk outside, moving number tiles to make number sentences etc)	1 more ( up to 20)  Counting up to 20  Number Bonds	add, more, and make, sum, total altogether double one more, two more ... ten more how many more to make ...? how many more is ... than ...? how much more is ...?
<b>Year 1</b>  <i>Addition as 'counting on'</i> $\square + \square$ (bridging 10) $\square \square + \square$ (bridging 20)	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> -Read, write and interpret mathematical statements involving addition (+) and equals (=) signs -Represent and use number bonds and related subtraction facts within 20 -Add one-digit and two-digit numbers to 20, including zero -Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as $9 = + 7$				
				Pairs to 20  Facts up to 20	Number bonds, number line Add, more, plus, make, sum, total, altogether

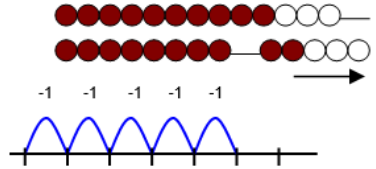
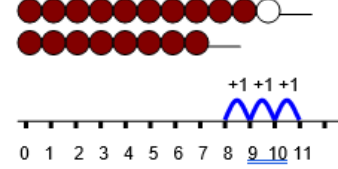
	<p>Counting on using number lines using cubes or Numicon.</p> 	<p>Children to represent the cubes using dots or crosses. They could put each part on a part whole model too.</p>  <p>Number line – jumps of 1 (modelled using bead strings)</p> <p><math>18 + 5 = 23</math></p> 	<p>The abstract number line:</p> <p>What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? <math>4 + 2</math></p>  <p><math>4 + 3 = 7</math> Four is a part, 3 is a part and the whole is seven.</p>  <p>No number line <math>18 + 5</math> <math>18 + 2 = 20</math> <math>20 + 3 = 23</math></p>	<p>1 / 10 more than a number Derive relate facts</p>	<p>Inverse Double, near double Equals, is the same as (including equals sign) How many more to make...? How many more is...than...? How much more is...?</p>
<p><b>Year 2</b></p> <p>□□ + □□ (bridging 10s)</p>	<p><b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Solve problems with addition:</li> <li>-Using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>-Applying their increasing knowledge of mental and written methods</li> <li>-Recall and use addition facts to 20 fluently, and derive and use related facts up to 100</li> <li>-Add numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, adding three one-digit numbers</li> <li>-Show that addition of two numbers can be done in any order (commutative)</li> <li>-Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</li> </ul>				
	<p>Pictures / Symbols</p> <p><math>23 + 12 = 35</math></p>  <p>TO + O using base 10. Continue to develop understanding of partitioning and place value. <math>41 + 8</math></p> 	<p>Number line (efficient jumps) (can also make jumps of 10's and 1's)</p> <p><math>35 + 47</math></p> 	<p>The abstract number line:</p> <p>What is 2 more than 4? What is the sum of 2 and 4? What is the total of 4 and 2? <math>4 + 2</math></p> 	<p>Bonds up to 20  Pairs to 100</p>	<p>addition add, more, and make, sum, total altogether double near double, one more, two more ... ten more ... one hundred more, how many more to make ...? how many more is ... than ...? how much more is ...?</p>

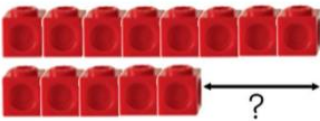
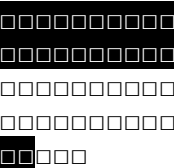
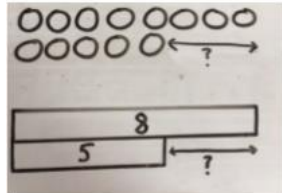
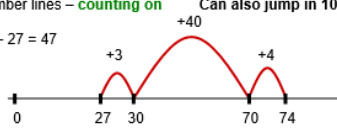
		<p>A bar model which encourages the children to count on, rather than count all.</p> 	<p><b>No number line</b></p> $35 + 47$ $47 + 30 = 77$ $77 + 3 = 80$ $80 + 2 = 82$	<p><b>Partitioning and recombining</b></p> $35 + 47$ $40 + 30 = 70$ $7 + 5 = 12$ $70 + 12 = 82$		
<p><b>Year 3</b></p> <p>□□+□□ (bridging 100)</p> <p>□□□+□□ (not bridging 1000)</p> <p>□□□+□□□ (not bridging 1000)</p>	<p><b>Curriculum 2014 Statutory Requirements</b>  <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds, a three-digit number and thousands add numbers with up to three digits, using --</li> <li>-Formal written methods of columnar addition</li> <li>-Estimate the answer to a calculation and use inverse operations to check answers</li> <li>-Solve problems, including missing number problems, using number facts, place value, and more complex addition</li> </ul>					
	<p>TO + TO using base 10. Continue to develop understanding of partitioning and place value.</p> <p>36 + 25</p> 	<p>Number line</p> <p>57 + 285 = 342</p>  <p>41 + 8</p> 	<p><b>Partitioning</b></p> $57 + 285$ $200 + 0 = 200$ $80 + 50 = 130$ $5 + 7 = 12$	<p><b>Expanded vertical</b></p> $336 + 87 = 423$ $+ \begin{array}{r} 300 \text{ and } 30 \text{ and } 6 \\ 80 \text{ and } 7 \\ \hline 300 \text{ and } 110 \text{ and } 13 \end{array}$	<p>Bonds to 20 / 100</p> <p>Pairs of two-digit multiples of 10</p> <p>Multiples of 50 that total 1000</p>	<p><b>All of the above +</b></p> <p>Expanded column addition estimate nearly roughly close to approximate, approximately about the same as just over, just under</p>
<p><b>Year 4</b></p> <p>□□□+□□□ (incl bridging 1000)</p> <p>Decimals: money</p>	<p><b>Curriculum 2014 Statutory Requirements</b>  <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Add with up to 4 digits using the formal written methods of columnar addition where appropriate</li> <li>-Estimate and use inverse operations to check answers to a calculation</li> <li>-Solve addition two-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>					
					<p>Bonds to 1000</p>	<p>Column addition estimate nearly roughly close to approximate,</p>

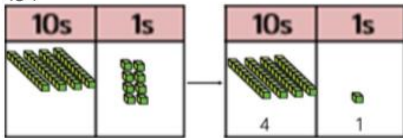
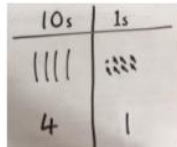
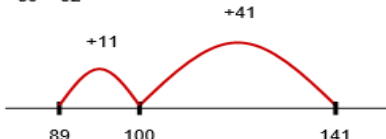
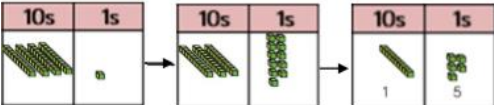
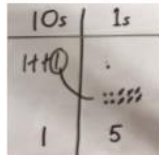
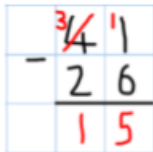
<p>(£7.85 + £3.49)</p>	<p><b>Use of place value counters to add HTO + TO, HTO + HTO etc.</b> When there are 10 ones in the 1s column- we exchange for 1 ten, when there are 10 tens in the 10s column- we exchange for 1 hundred.</p> 	<p>Children to represent the counters in a place value chart, circling when they make an exchange.</p>  <p>Partitioning</p> $374 + 248$ $300 + 200 = 500$ $70 + 40 = 110$ $4 + 8 = 12$	<p><b>Expanded vertical</b></p> $\begin{array}{r} 374 \\ + 248 \\ \hline 12 \text{ (4 + 8)} \\ 110 \text{ (70 + 40)} \\ 500 \text{ (300 + 200)} \\ \hline 622 \end{array}$ <p><b>Compact vertical</b></p> $\begin{array}{r} 374 \\ + 248 \\ \hline 622 \\ \hline 11 \end{array}$	<p>Derive sums of pairs of multiples of 10 / 100 / 1000</p> <p>(Multiples of 50 that total 1000)</p> <p>Pairs of fractions to 1</p>	<p>approximately about the same as just over, just under</p>
<p><b>Year 5</b></p> <p>□□□□+□□□□ Decimals up to 2dp (23.7 + 48.56)</p>	<p><b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Add whole numbers with more than 4 digits, including using formal written methods (columnar addition)</li> <li>-Add numbers mentally with increasingly large numbers</li> <li>-Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>-Solve addition multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>				
<p><b>Year 6</b></p> <p>Consolidate / extend Y5 including: Three numbers Decimals up to 3dp (context: measures)</p>	<ul style="list-style-type: none"> <li>As previous year groups – using place value counters, Base 10, Numicon as necessary</li> </ul>	<p><b>Expanded vertical</b></p> $\begin{array}{r} 23.70 \\ + 48.56 \\ \hline 0.06 \text{ (0 + 0.06)} \\ 1.20 \text{ (0.7 + 0.5)} \\ 11.00 \text{ (3 + 8)} \\ 60.00 \text{ (20 + 40)} \\ \hline 72.26 \end{array}$	<p><b>Compact vertical</b></p> $\begin{array}{r} 23.70 \\ + 48.56 \\ \hline 72.26 \\ \hline 11 \end{array}$	<p>(derive) Bonds up to 1 (2dp)</p> <p>(derive) Bonds up to 10 (1dp)</p>	<p><b>All of the above +</b></p> <p>Efficient written method</p>
	<ul style="list-style-type: none"> <li>As previous year groups – using place value counters, Base 10, Numicon as necessary</li> </ul>	<p>As above</p>	<p><b>Compact vertical</b></p> $\begin{array}{r} 3.243 \\ + 18.070 \\ \hline 21.313 \\ \hline 11 \end{array}$	<p>As above...</p>	<p><b>All of the above +</b></p> <p>Order of operations</p>

## SUBTRACTION:

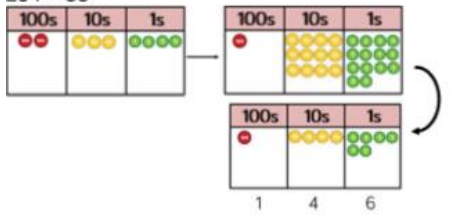
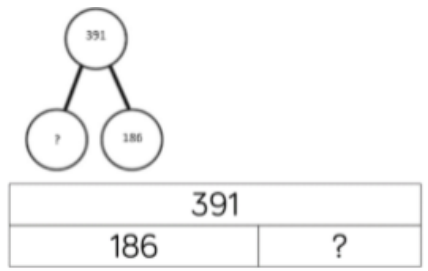
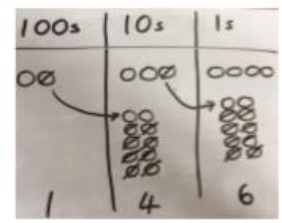
	CONCRETE	PICTORIAL	ABSTRACT	MENTAL RECALL	KEY VOCAB
<b>Reception</b>  <i>Subtraction as 'taking away' from a group</i>	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> 40-60 Recognise some numerals of personal significance. • Recognises numerals 1 to 5. • Counts up to three or four objects by saying one number name for each item. • Counts actions or objects which cannot be moved. • Counts objects to 10, and beginning to count beyond 10. • Counts out up to six objects from a larger group. Selects the correct numeral to represent 1 to 5, then 1 to 10 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Uses the language of 'more' and 'fewer' to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations. Early Learning Goal Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.				
	Pictures / Objects I have five cakes. I eat two of them. How many do I have left?  Might be recorded as: $5 - 2 = 3$  Physically taking away and removing objects from a whole (ten frames, Numicon, cubes and other items such as beanbags could be used). $4 - 3 = 1$  	Symbols Mum baked 9 biscuits. I ate 5. How many were left?  Might be recorded as: $9 - 5 = 4$	Recording their own number sentences with the correct symbols e.g. $6 - 4 = 2$ OR $2 = 6 - 4$  (This can be done in a number of ways – chalk outside, moving number tiles to make number sentences etc)	1 less (nos up to 20 )	take away how many are left/left over? how many have gone? one less, two less, ten less ... how many fewer is ... than ...? how much less is ...? difference between
<b>Year 1</b>  <i>Subtraction as 'taking away' and 'difference' (by counting on)</i>  $\square - \square$ $\square\square - \square$ (bridging 10)	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> -Read, write and interpret mathematical statements involving subtraction (-) and equals (=) signs -Represent and use number bonds and related subtraction facts within 20 -Subtract one-digit and two-digit numbers to 20, including zero -Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as $9 = \_ - 7$				
	Counting back (using number lines or number tracks) children start with 6 and count back 2. $6 - 2 = 4$ 	Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used. 	$4 - 3 =$ 	Subtraction facts to 10  1 / 10 less than a number	Half, halve Equals, is the same as (including equals sign) Difference between How many more to make...? How many more is...than...? How much more is...?

	<p><b>Taking away</b> – jumps of 1 (modelled using bead strings)</p> <p><math>13 - 5 = 8</math></p> 	<p><b>Counting on</b> – jumps of 1 (modelled using bead strings)</p> <p><math>11 - 8 = 3</math></p> 	<p><b>Counting on</b> (efficient jumps)</p> <p>Number line / no number line</p> <p><math>8 + 2 = 10</math> <math>10 + 1 = 11</math></p>		<p>Subtract, take away, minus How many fewer is...than...? How much less is...?</p>
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<p><b>Year 2</b></p> <p><i>Subtraction as inverse of addition <math>\square\square - \square\square</math> – (bridging 10s)</i></p>	<p><b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Solve problems with subtraction: using concrete objects and pictorial representations, including those involving numbers, quantities and measures</li> <li>-Applying their increasing knowledge of mental and written methods</li> <li>-Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100</li> <li>-Subtract numbers using concrete objects, pictorial representations, and mentally, including: a two-digit number and ones, a two-digit number and tens, two two-digit numbers, subtracting three one-digit numbers</li> <li>-Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot</li> <li>-Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems</li> </ul>				
	<p><b>Finding the difference</b> (using cubes, Numicon or Cuisenaire rods, other objects can also be used).</p> <p>Calculate the difference between 8 and 5.</p>  <p>Pictures / Symbols</p> <p><math>45 - 22 = 23</math></p> 	<p>Children to draw the cubes/other concrete objects which they have used or use the bar model to illustrate what they need to calculate.</p>  <p>Number lines – <b>counting on</b> Can also jump in 10's and 1's</p> <p><math>74 - 27 = 47</math></p> 	<p><b>Find the difference between 8 and 5.</b></p> <p><math>8 - 5</math>, the difference is _____</p> <p>Children to explore why <math>9 - 6 = 8 - 5 = 7 - 4</math> have the same difference.</p> <p><b>Partitioning</b></p> <p><math>74 - 27</math></p> <p><math>74 - 20 = 54</math> <math>54 - 4 = 50</math> <math>50 - 3 = 47</math></p>	<p>Subtraction facts to at least 10</p>	<p>subtract take away how many are left/left over? how many have gone? one less, two less, ten less ... one hundred less how many fewer is ... than ...? how much less is ...? difference between equals is the same as number bonds/pairs/facts tens boundary</p>




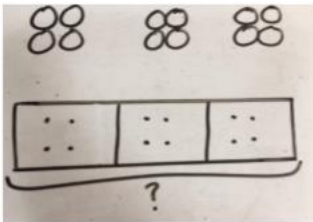
<p><b>Year 3</b></p> <p>□□ - □□ □□□ - □□ □□□ - □□□</p>	<p><b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b></p> <p>-Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds a three-digit number and thousands</p> <p>-Subtract numbers with up to three digits, using formal written methods</p> <p>-Estimate the answer to a calculation and use inverse operations to check answers</p> <p>-Solve problems, including missing number problems, using number facts, place value, and more complex subtraction.</p>		
<p>Column method using base 10. 48-7</p>  <p>Other concrete resources can be used e.g. Place value counters and Numicon</p>	<p>Children to represent the base 10 pictorially.</p>  <p>Number line – counting on for small differences</p> <p>141 – 89 = 52</p> 	<p><b>Decomposition</b> 272 – 48 = 224 [Red Alert]</p> <p>Partitioning</p> <p>272 – 48</p> <p>272 - 40 = 232 232 - 8 = 224</p> <p>Exchange a ten for ten ones</p>	<p>Subtraction facts to 20</p> <p>Differences of multiples of 10</p> <p><b>All of the above +</b></p> <p>Expanded column subtraction, exchanging</p>
<p><b>Year 4</b></p> <p>□□□ - □□ □□□ - □□□</p> <p>Decimals: money (£7.85 - £3.49)</p>	<p><b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b></p> <p>-Subtract with up to 4 digits using the formal written methods of columnar subtraction where appropriate</p> <p>-Estimate and use inverse operations to check answers to a calculation</p> <p>-Solve subtraction two-step problems in contexts, deciding which operations and methods to use and why</p>		
<p>Column method using base 10 and having to exchange. 41 – 26</p> 	<p>Represent the base 10 pictorially, remembering to show the exchange.</p> 	<p><b>Decomposition</b> 723 – 458 = 265 [Red Alert]</p> <p>700 20 3 400 50 8</p> <p>600 110 13 400 50 8 200 60 5</p> <p>Formal column method. Children must understand that when they have exchanged the 10 they still have 41 because 41 = 30 + 11.</p> 	<p>Derive differences of pairs of multiples of 10 / 100 / 1000</p> <p><b>All of the above +</b></p> <p>Compact column subtraction, decomposition, inverse operation</p>

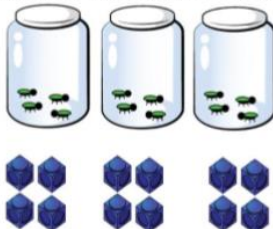
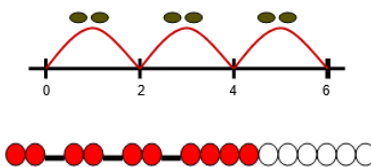
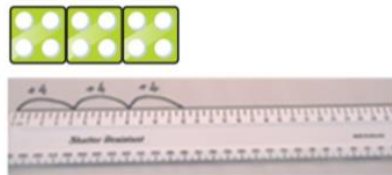
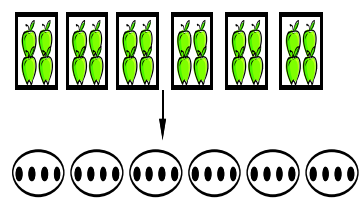
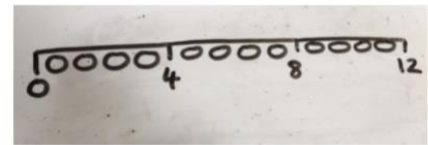
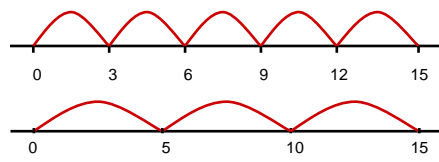
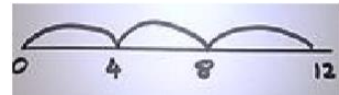
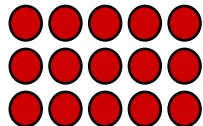


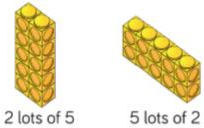
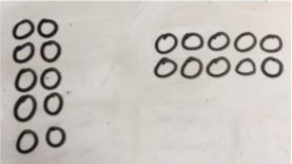
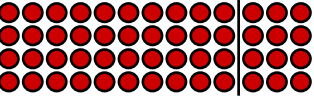
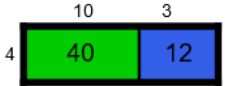
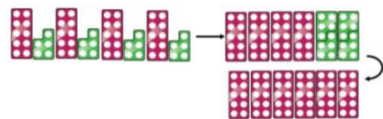

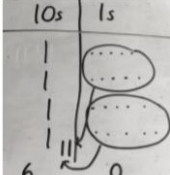
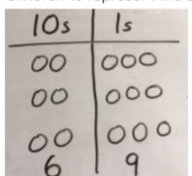
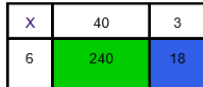
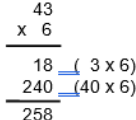
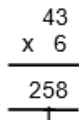
<p><b>Year 5</b></p> <p>□□□□ – □□□□</p> <p>Decimals up to 2dp (72.5 – 45.7)</p>	<p><b>Curriculum 2014 Statutory Requirements</b>  <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Subtract whole numbers with more than 4 digits, including using formal written methods (columnar subtraction)</li> <li>-Subtract numbers mentally with increasingly large numbers</li> <li>-Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy</li> <li>-Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why.</li> </ul>				
<p><b>Year 6</b></p> <p>Consolidate / extend Y5 including: Decimal to 3 dp relating to measures</p>	<p><b>Curriculum 2014 Statutory Requirements</b>  <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Solve subtraction multi-step problems in contexts, deciding which operations and methods to use and why</li> </ul>				
<ul style="list-style-type: none"> <li>As previous year groups – using place value counters, Base 10, Numicon as necessary</li> </ul>	<p>Column method using place value counters.</p> <p>234 – 88</p>  	<p>Represent the place value counters pictorially, remembering to show what has been exchanged.</p> 	<p>Formal column method. Children must understand what has happened when they have crossed out digits.</p> $\begin{array}{r} 234 \\ - 88 \\ \hline 146 \end{array}$ <p>Missing digit calculations</p> $\begin{array}{r} 39\Box \\ - \Box\Box6 \\ \hline \Box05 \end{array}$	<p>Use number facts for mental subtraction</p> <p>9 – 2 = 7</p> <p>0.9 – 0.2 = 0.7</p> <p>0.09 – 0.02 = 0.07</p>	<p><b>All of the above +</b></p> <p>Efficient written method</p>



## MULTIPLICATION:

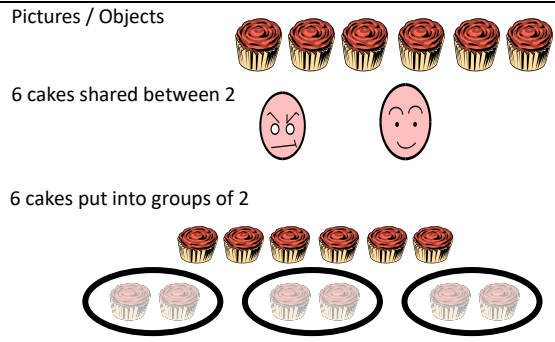
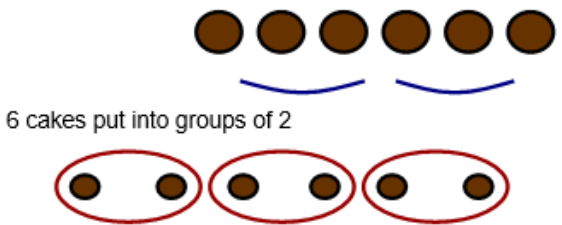
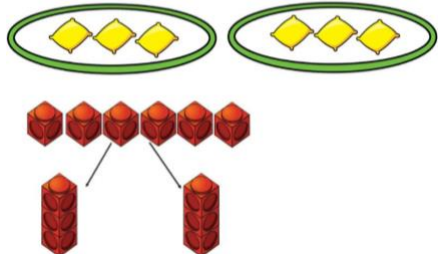
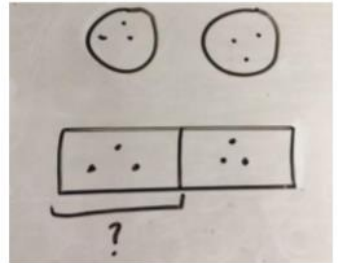
	CONCRETE	PICTORIAL	ABSTRACT	MENTAL RECALL	KEY VOCAB
<b>Reception</b>  <i>Count repeated groups of the same size (1s / 2s / 5s / 10s)</i>	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> 40-60 Recognise some numerals of personal significance. • Recognises numerals 1 to 5. • Counts up to three or four objects by saying one number name for each item. • Counts actions or objects which cannot be moved. • Counts objects to 10, and beginning to count beyond 10. • Counts out up to six objects from a larger group. Selects the correct numeral to represent 1 to 5, then 1 to 10 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Uses the language of 'more' and 'fewer' to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations. Early Learning Goal Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.				
	Pictures / Objects 3 plates, 2 cakes on each plate: 	Symbols 3 plates, 2 cakes on each plate: 	Repeated addition: $2 + 2 + 2 = 6$	Counting on in 1s and 2s	doubling
<b>Year 1</b>  <i>Solve (practical) problems</i>	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> -Solve one-step problems involving multiplication, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher				
	Pictures / Symbols There are three sweets in one bag. How many sweets are there in five bags? 	Children to represent the practical resources in a picture and use a bar model.  Number line (modelled using bead strings) $2 \times 3$ or $3 \times 2$ [two, three times] or [three groups of two]	$3 \times 4 = 12$ $4 + 4 + 4 = 12$	Count on in 1s, 2s, 5s and 10s Doubles of numbers to 20	multiplication multiply multiplied by multiple division dividing grouping Odd, even Count in twos, threes, fives Count in tens (forwards from/backwards from) How many times? Lots of, groups of Once, twice, three times, five times Multiple of, times, multiply, multiply by

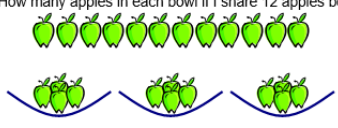
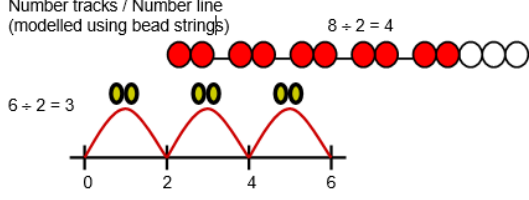
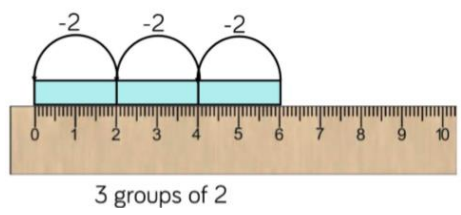
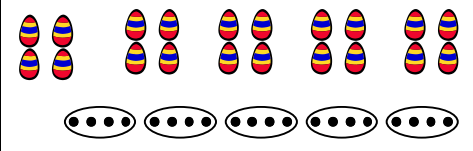
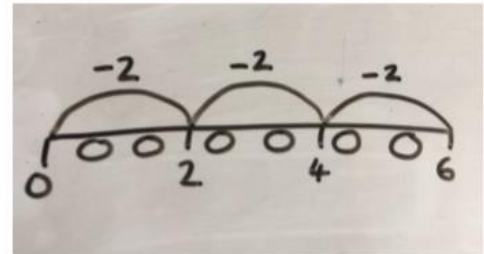
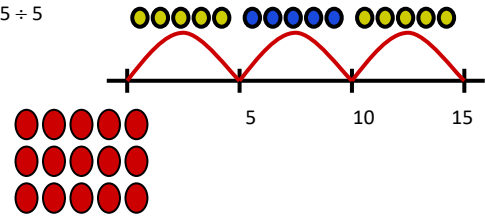
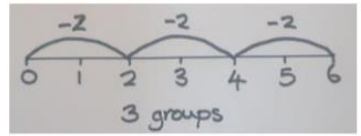
	<p>Repeated grouping/repeated addition <math>3 \times 4</math> <math>4 + 4 + 4</math> There are 3 equal groups, with 4 in each group.</p> 				
<p><b>Year 2</b></p> <p><i>Multiplication as repeated addition and arrays</i></p>	<p><b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"><li>-Recall and use multiplication facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li><li>-Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (x) and equals (=) signs</li><li>-Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot</li><li>-Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts.</li></ul>				
	<p>Number lines to show repeated groups- <math>3 \times 4</math></p>  <p>Cuisenaire rods can be used too.</p> <p>Pictures / Symbols</p> <p>There are four apples in each box. How many apples in six boxes</p> 	<p>Represent this pictorially alongside a number line e.g.:</p>  <p>Repeated addition</p> <p><math>5 \times 3</math> or <math>3 \times 5</math></p> 	<p>Abstract number line showing three jumps of four.</p> <p><math>3 \times 4 = 12</math></p>  <p>Arrays</p> <p><math>5 \times 3</math> or <math>3 \times 5</math></p>  <p>Also <math>14 \times 2</math> as <math>(10 \times 2 \text{ and } 4 \times 2)</math></p>	<p>Count in 2s, 5s and 10s Derive multiples of 2, 5 &amp; 10 Relate to x facts (and derive related ÷ facts)</p> <p>Doubles of numbers to 100</p>	<p>Count in twos, threes, fives Count in tens (forwards from/backwards from) How many times? Lots of, groups of Once, twice, three times, five times Multiple of, times, multiply, multiply by Repeated addition Array, row, column Double</p>

<p><b>Year 3</b></p> <p>□□x□ (eg 13 x 4)</p>	<p><b>Curriculum 2014 Statutory Requirements</b>  <b>Pupils should be taught to:</b>          -Recall and use multiplication facts for the 3, 4 and 8 multiplication tables          -Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to written methods          -Solve problems involving missing number problems involving multiplication including positive number scaling problems and correspondence problems where n objects are connected to m objects.</p>				
<p><b>Year 4</b></p> <p>Record, support and explain: □□x□ □□x□</p>	<p><b>Curriculum 2014 Statutory Requirements</b>  <b>Pupils should be taught to:</b>          -Recall and use multiplication facts for multiplication tables up to 12 x 12          -Use place value, known and derived facts to multiply mentally, including: x0 x1 and multiplying together three numbers          Recognise and use factor pairs and commutativity in mental calculations multiply two-digit and three-digit numbers by a one-digit number using formal written layout          -Solve problems involving multiplying, including the distributive law to multiply two-digit numbers by one digit including positive number scaling problems and correspondence problems where n objects are connected to m objects.</p>				
	<p>Use arrays to illustrate commutativity counters and other objects can also be used.  <math>2 \times 5 = 5 \times 2</math></p>  <p>To include representations with the Numicon pieces and counters (and other objects)</p>	<p>Children to represent the arrays pictorially.</p>  <p>Arrays</p>  <p><math>10 \times 4 = 40</math></p> <p><math>3 \times 4 = 12</math></p>	<p>Children to be able to use an array to write a range of calculations e.g.</p> <p><math>10 = 2 \times 5</math>  <math>5 \times 2 = 10</math>  <math>2 + 2 + 2 + 2 + 2 = 10</math>  <math>10 = 5 + 5</math></p> <p>Compact grid method</p> <p>13 x 4</p>  <p>Partitioning (possible use of number line to record steps)</p> <p><math>13 \times 4 = 52</math>  <math>10 \times 4 = 40</math>  <math>3 \times 4 = 12</math></p>	<p>Derive / recall 2, 3, 4, 5, 6, 8 and 10 times tables (Derive related division facts)</p> <p>Recognise multiples of 2, 5 and 10 up to 1000</p>	<p><b>All of the above +</b></p> <p>Product, Multiples of four, eight, fifty and one hundred Scale up</p>
	<p>Partition to multiply using Numicon, base 10 or Cuisenaire rods.  <math>4 \times 15</math></p>  <p>Formal column method with place value counters (base 10 can also be used.) <math>3 \times 23</math></p> 	<p>Children to represent the concrete manipulatives pictorially.</p>  <p>Children to represent the counters pictorially.</p> 	<p>Compact grid method</p> <p>43 x 6</p>  <p>Expanded vertical</p>  <p>Compact vertical</p> 	<p>Derive / recall facts to 10 x 10</p> <p>Multiples of numbers to 10 up to the 10<sup>th</sup> multiple</p>	<p><b>All of the above +</b></p> <p>Multiple, Factor Multiplication facts (up to 12x12) Inverse, Derive</p>


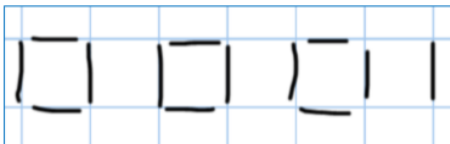
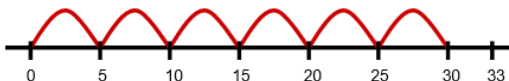
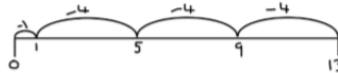
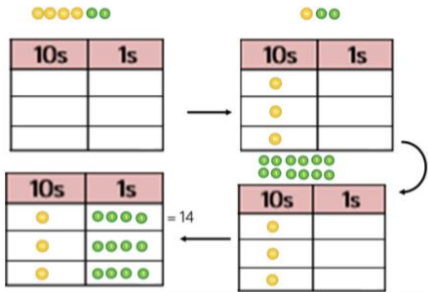
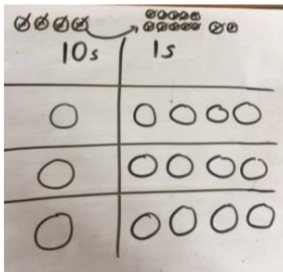
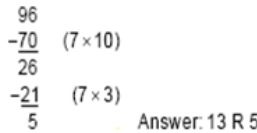
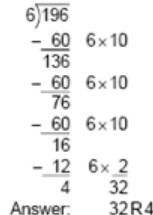
<div>Year 5</div> <div>Refine and use efficient methods:</div> <div><div>□□□ × □</div><div>□□ × □□</div><div>□.□ × □</div></div>	<div>Curriculum 2014 Statutory Requirements</div> <div>Pupils should be taught to:</div> <div>-Identify multiples and factors: all factor pairs of a number, common factors of two numbers, establish whether a number up to 100 is prime and recall prime numbers up to 19</div> <div>-Multiply numbers up to four digits by a one- or two-digit number using a formal written method</div> <div>-Multiply whole numbers and those involving decimals by 10, 100 and 1000.</div>				
	<div>Formal column method with place value counters.</div> <div>6 × 23</div> <div><div><div>100s</div><div>10s</div><div>1s</div></div><div><div></div><div></div><div></div></div></div> <div><div><div>100s</div><div>10s</div><div>1s</div></div><div><div></div><div></div><div></div></div></div>	<div>Children to represent the counters/base 10, pictorially e.g. the image below.</div> <div><div><div>100s</div><div>10s</div><div>1s</div></div><div><div></div><div></div><div></div></div></div> <div>Grid method</div> <div>47 × 36</div> <div>(estimate: 50 × 40 = 2000)</div> <div><div><div>×</div><div>40</div><div>7</div><div></div></div><div><div>30</div><div>1200</div><div>210</div><div>1410</div></div><div><div>6</div><div>240</div><div>42</div><div>282</div></div><div><div></div><div></div><div></div><div>1692</div></div></div>	<div>Expanded vertical</div> <div>237 × 4</div> <div>(estimate: 250 × 4 = 1000)</div> <div><div>237</div><div>×</div><div>4</div><div></div><div>28</div><div>120</div><div>800</div><div>948</div></div> <div>28 (7 × 4)</div> <div>120 (30 × 4)</div> <div>800 (200 × 4)</div> <div>Compact vertical</div> <div>256 × 18</div> <div>(estimate: 250 × 20 = 5000)</div> <div><div>256</div><div>×</div><div>18</div><div></div><div>2048</div><div>2560</div><div>4608</div></div> <div>Answer: 256 × 18 = 4608</div>	<div>Recall quickly facts to 10 × 10</div> <div>Use facts to multiply pairs of multiples of 10 / 100</div> <div>Use known facts to derive other facts</div> <div>[Find common multiples of two numbers]</div>	<div>All of the above +</div> <div>Factor pairs</div> <div>Composite numbers, prime number, prime factors, square number, cubed number</div> <div>Formal written method</div>
<div>Year 6</div> <div>Use efficient methods:</div> <div><div>Integer × U (eg 2307 × 8)</div><div>Decimal × U (eg 31.6 × 7)</div><div>TU × TU</div><div>HTU × TU</div></div>	<div>Curriculum 2014 Statutory Requirements</div> <div>Pupils should be taught to:</div> <div>-Identify multi-digit numbers up to 4 digits by a two-digit number using formal, long multiplication</div> <div>-Identify common factors, common multiples and common prime numbers</div> <div>-Use their knowledge of the order of operations to carry out calculations involving the four operations</div>				
<div>As previous year groups – using place value counters, Base 10, Numicon as necessary</div>	<div>What is the calculation?</div> <div>What is the product?</div> <div><div><div>100s</div><div>10s</div><div>1s</div></div><div><div></div><div></div><div></div></div></div> <div><div><div>23</div><div>23</div><div>23</div><div>23</div><div>23</div><div>23</div></div><div></div><div>?</div></div>	<div>Expanded vertical</div> <div>2327 × 8</div> <div>(estimate: 2300 × 10 = 23 000)</div> <div><div>2327</div><div>×</div><div>8</div><div></div><div>56</div><div>160</div><div>2400</div><div>16000</div><div>18616</div></div> <div>56 (7 × 8)</div> <div>160 (20 × 8)</div> <div>2400 (300 × 8)</div> <div>16000 (2000 × 8)</div> <div>Compact vertical</div> <div>4.7 × 8</div> <div>(estimate: 5 × 8 = 40)</div> <div><div>4.7</div><div>×</div><div>8</div><div></div><div>37.6</div><div>5</div></div>	<div>Use facts up to 10 × 10 to derive facts involving multiples of 10 / 100 (eg 80 × 30) and decimals (eg 0.8 × 7)</div> <div>Derive squares of numbers to 12 × 12</div> <div>Derive corresponding squares of multiples of 10</div>	<div>All of the above +</div> <div>Order of operations</div> <div>Common factors, common multiples</div>	

## DIVISION:

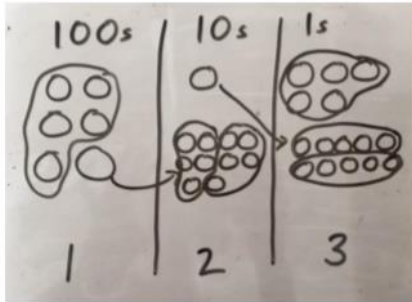
	CONCRETE	PICTORIAL	ABSTRACT	MENTAL RECALL	KEY VOCAB		
<b>Reception</b>  <i>Share objects into equal groups and count how many in each group</i>	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> 40-60 Recognise some numerals of personal significance. • Recognises numerals 1 to 5. • Counts up to three or four objects by saying one number name for each item. • Counts actions or objects which cannot be moved. • Counts objects to 10, and beginning to count beyond 10. • Counts out up to six objects from a larger group. Selects the correct numeral to represent 1 to 5, then 1 to 10 objects. • Counts an irregular arrangement of up to ten objects. • Estimates how many objects they can see and checks by counting them. • Uses the language of ‘more’ and ‘fewer’ to compare two sets of objects. • Finds the total number of items in two groups by counting all of them. • Says the number that is one more than a given number. • Finds one more or one less from a group of up to five objects, then ten objects. • In practical activities and discussion, beginning to use the vocabulary involved in adding and subtracting. • Records, using marks that they can interpret and explain. • Begins to identify own mathematical problems based on own interests and fascinations. Early Learning Goal Children count reliably with numbers from one to 20, place them in order and say which number is one more or one less than a given number. Using quantities and objects, they add and subtract two single-digit numbers and count on or back to find the answer. They solve problems, including doubling, halving and sharing.						
	<p>Pictures / Objects</p>  <p>6 cakes shared between 2</p> <p>6 cakes put into groups of 2</p>	<p>Symbols</p> <p>6 cakes shared between 2</p>  <p>6 cakes put into groups of 2</p>			Sharing, Halving		
<b>Year 1</b>  <i>Solve (practical) problems that involve sharing into equal groups</i>	<b>Curriculum 2014 Statutory Requirements</b> <b>Pupils should be taught to:</b> -Solve one-step problems involving division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher.						
	<p>Sharing using a range of objects.</p> <p><math>6 \div 2</math></p> 	<p>Represent the sharing pictorially.</p> 	<p><math>6 \div 2 = 3</math></p> <table border="1"><tr><td>3</td><td>3</td></tr></table> <p>Children should also be encouraged to use their 2 times tables facts.</p>	3	3		Division, dividing, grouping, sharing, halving, array, number patterns
3	3						

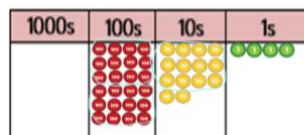
	<p>Pictures / Symbols</p> <p>How many apples in each bowl if I share 12 apples between 3 bowls?</p> 	<p>Number tracks / Number line (modelled using bead strings)</p> <p><math>8 \div 2 = 4</math></p> 			
<p><b>Year 2</b></p> <p><i>Division as sharing and grouping (including remainders)</i></p> <p><math>\square \square \div \square</math> (where divisor is 2, 5 or 10)</p>	<p><b>Curriculum 2014 Statutory Requirements</b></p> <p><b>Pupils should be taught to:</b></p> <ul style="list-style-type: none"> <li>-Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers</li> <li>-Calculate mathematical statements for division within the multiplication tables and write them using the signs <math>\div</math> and <math>=</math></li> <li>-Show that multiplication of two numbers is commutative but division is not</li> <li>-Solve problems involving division using materials, arrays, repeated addition, mental methods and division facts, including problems in contexts.</li> </ul>				
	<p>Repeated subtraction using Cuisenaire rods above a ruler.</p> <p><math>6 \div 2</math></p>  <p>3 groups of 2</p> <p>Pictures / Symbols</p> <p>Four eggs fit in a box. How many boxes would you need to pack 20 eggs?</p> 	<p>Children to represent repeated subtraction pictorially.</p>  <p>Number lines / Arrays</p> <p><math>15 \div 5</math></p> 	<p>Partitioning</p> <p><math>28 \div 2</math></p> <p><math>20 \div 2 = 10</math></p> <p><math>8 \div 2 = 4</math></p> <p>Abstract number line to represent the equal groups that have been subtracted.</p> 	<p>Derive / recall <math>\div</math> facts for 2, 5 and 10 tables</p> <p>Derive / recall halves of even numbers to 40</p>	<p>Division, dividing, divide, divided by, divided into grouping sharing, share, share equally left, left over one each, two each, three each ... ten each group in pairs, threes ... tens equal groups of</p>



<div>Year 3</div> <div><div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>(where divisor is 2, 3, 4, 5, 6, 8 or 10)</div><div>Round remainders up / down, depending on the context</div></div></div>	<div>Curriculum 2014 Statutory Requirements</div> <div>Pupils should be taught to:</div> <div>-Recall and use multiplication and division facts for the 3, 4 and 8 x tables</div> <div>-Write and calculate mathematical statements for division using the multiplication tables they know, including 2-digit divided by 1-digit using mental and progressing to formal written methods</div> <div>-Solve problems, involving missing number problems, involving division, including positive number scaling problems and correspondence problems where n objects are connected to m objects.</div>				
	<div>2d + 1d with remainders using lollipop sticks. Cuisenaire rods, above a ruler can also be used.</div> <div>13 ÷ 4</div> <div>Use of lollipop sticks to form wholes- squares are made because we are dividing by 4.</div> <div></div> <div>There are 3 whole squares, with 1 left over.</div>	<div>Children to represent the lollipop sticks pictorially.</div> <div></div> <div>Number lines (start from zero)</div> <div>33 ÷ 5 = 6 r3</div> <div></div>	<div>13 ÷ 4 = 3 remainder 1</div> <div>Children should be encouraged to use their times table facts; they could also represent repeated addition on a number line.</div> <div>'3 groups of 4, with 1 left over'</div> <div></div> <div>Partitioning (multiples of the divisor)</div> <div>50 ÷ 4 = 12 r2</div> <div>10 x 4 = 40</div> <div>2 x 4 = 8 (48)</div>	<div>Derive / recall ÷ facts for 2, 3, 4, 5, 6, 8 and 10 tables</div>	<div>All of the above +</div> <div>Remainder, row, column, division facts</div>
<div>Year 4</div> <div><div>Record, support and explain:</div><div><div><div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div><div></div><div></div><div></div></div><div><div></div><div></div><div></div></div></div><div>(e.g 98 ÷ 6)</div></div></div>	<div>Curriculum 2014 Statutory Requirements</div> <div>Pupils should be taught to:</div> <div>recall multiplication and division facts up to 12 x 12</div> <div>use place value, known and derived facts to divide mentally, including dividing by 1</div> <div>solve problems involving dividing a three-digit number by one-digit and number using a formal layout</div>				
	<div>Sharing using place value counters.</div> <div>42 ÷ 3 = 14</div> <div></div>	<div>Children to represent the place value counters pictorially.</div> <div></div> <div>Partitioning (multiples of the divisor)</div> <div>67 ÷ 4 = 16 r3</div> <div>10 x 4 = 40</div> <div>6 x 4 = 24 (64)</div>	<div>Grouping (vertical layout)</div> <div>96 ÷ 7</div> <div></div> <div>Grouping (expanded)</div> <div></div>	<div>Derive / recall ÷ facts up to the 12 times table</div>	<div>All of the above +</div> <div>Inverse, derive</div>

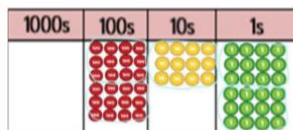


<div>Year 5</div> <div>Refine and use efficient methods:</div> <div><div>□□□ ÷ □</div><div>□□□□ ÷ □</div></div>	<div>Curriculum 2014 Statutory Requirements</div> <div>Pupils should be taught to:</div> <div><div>-Identify multiples and factors, including finding all factor pairs of a number, common factors of two numbers, know and use the vocabulary of prime numbers and establish whether a number up to 100 is prime</div><div>-Multiply and divide numbers mentally drawing on known facts</div><div>-Divide numbers up to 4 digits by a one-digit number using a written method and interpret remainders appropriately for the context</div><div>-Divide whole numbers and those involving decimals by 10, 100 and 1000.</div></div>				
	<div>Short division using place value counters to group. 615 ÷ 5</div> <div><div><div>100s</div><div>10s</div><div>1s</div></div><div><div><div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div></div><div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div></div><div><div>1</div><div>2</div><div>3</div></div></div></div> <div><div>1. Make 615 with place value counters.</div><div>2. How many groups of 5 hundreds can you make with 6 hundred counters?</div><div>3. Exchange 1 hundred for 10 tens.</div><div>4. How many groups of 5 tens can you make with 11 ten counters?</div><div>5. Exchange 1 ten for 10 ones.</div><div>6. How many groups of 5 ones can you make with 15 ones?</div></div>	<div>Represent the place value counters pictorially.</div> <div></div>	<div>Grouping (efficient)</div> <div><div>346 ÷ 8</div><div>(estimate: 400 ÷ 8 = 50)</div><div>8 346</div><div>-320 (8 × 40)</div><div>26</div><div>-24 (8 × 3)</div><div>2</div><div>Answer: 43 R 2</div></div> <div>Short' division</div> <div><div>291 ÷ 3 (estimate: 270 ÷ 3 = 90)</div><div>3 290 + 1 = 3 270 + 21</div><div>This is then shortened to:</div><div>97</div><div>3 291</div></div>	<div>Recall quickly ÷ facts up to 10 times table</div>	<div>All of the above +</div> <div>square, squared cube, cubed, Factor pairs, composite numbers, prime number, prime factors,</div>
<div>Year 6</div> <div>Use efficient methods:</div> <div>Integer ÷ □(eg 123 ÷ 7)</div> <div>Decimal ÷ □ (eg 27.6 ÷ 8)</div> <div>□□□HTU ÷ □□</div>	<div>Curriculum 2014 Statutory Requirements</div> <div>Pupils should be taught to:</div> <div><div>-Divide numbers up to 4 digits by a two-digit 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.</div><div>-Divide numbers up to 4 digits by a two-digit number using the formal written method of short division as appropriate.</div></div>				
	<div>Long division using place value counters 2544 ÷ 12</div> <div><div><div>1000s</div><div>100s</div><div>10s</div><div>1s</div></div><div><div><div>1000</div><div>1000</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div></div><div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div></div><div><div>1000s</div><div>100s</div><div>10s</div><div>1s</div></div><div><div><div>1000</div><div>1000</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div><div>100</div></div><div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div><div>10</div></div><div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div><div>1</div></div></div></div> <div><div>We can't group 2 thousands into groups of 12 so will exchange them.</div><div>We can group 24 hundreds into groups of 12 which leaves with 1 hundred.</div></div> <div><div>0.2</div><div>12 2544</div><div>24</div><div>1</div></div>	<div>'Short' division</div> <div><div>43.4 ÷ 7</div><div>(estimate: 42 ÷ 7 = 6)</div><div>6.2</div><div>7 43.4</div></div> <div>Partitioning</div> <div><div>43.4 ÷ 7 = 6.2</div><div>6 x 7 = 42</div><div>0.2 x 7 = 1.4 (43.4)</div></div>	<div>Derive ÷ facts involving multiples of 10 / 100 (eg 240 ÷ 30) and decimals (eg 4.8 ÷ 6)</div>	<div>All of the above +</div> <div>Order of operations Common factors, common multiples</div>	



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

$$\begin{array}{r}
 0 \ 2 \ 1 \\
 12 \overline{) 2544} \\
 \underline{24} \phantom{00} \\
 14 \phantom{00} \\
 \underline{12} \phantom{00} \\
 2
 \end{array}$$



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

$$\begin{array}{r}
 0 \ 2 \ 1 \ 2 \\
 12 \overline{) 2544} \\
 \underline{24} \phantom{00} \\
 14 \phantom{00} \\
 \underline{12} \phantom{00} \\
 24 \\
 \underline{24} \\
 0
 \end{array}$$

'Long' division

$$560 \div 24 \mid (\text{estimate: } 550 \div 25 = 22)$$

$$\begin{array}{r}
 23 \\
 24 \overline{) 560} \\
 \underline{480} \phantom{0} \\
 80 \\
 \underline{72} \phantom{0} \\
 8
 \end{array}$$

Answer: 23 R 8