



ABBAY MEAD
PRIMARY ACADEMY

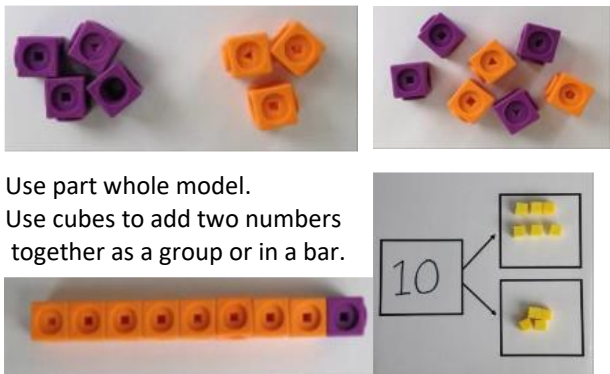
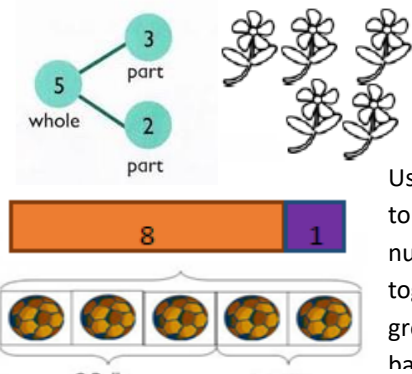
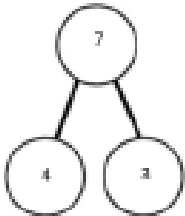

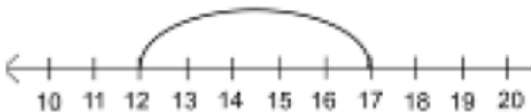
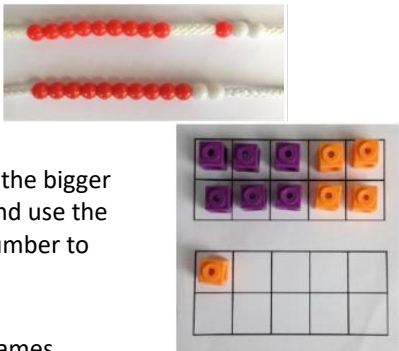
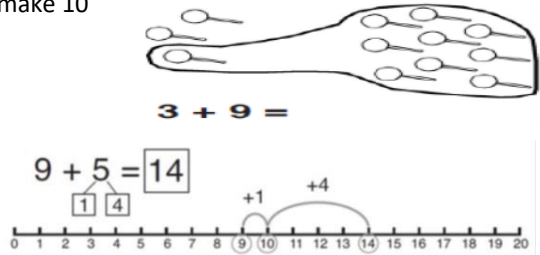

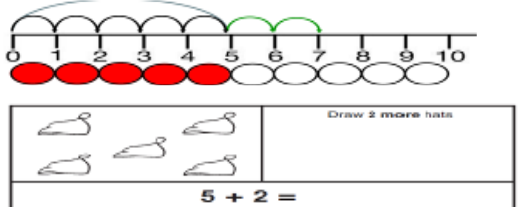
Calculation policy

This policy is a working document and will be revised and amended as necessary.

Some images have been copied from the NCETM PD materials.




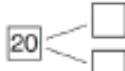
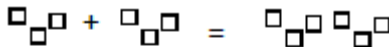
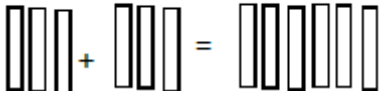




Addition

Key language: sum, total, parts and wholes, plus, add, altogether, more, 'is equal to' 'is the same as'.

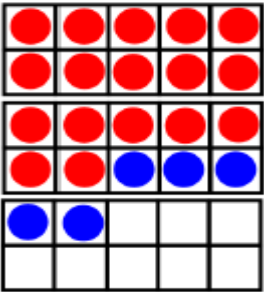
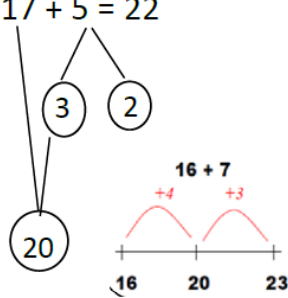
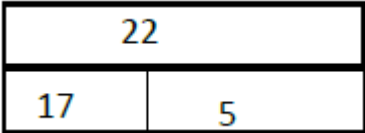

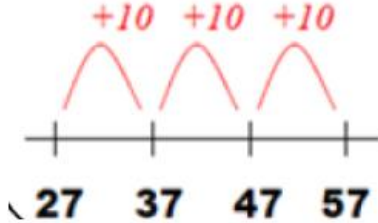

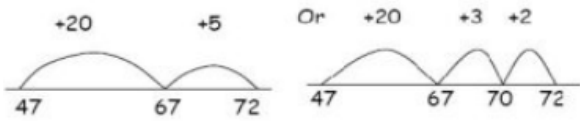
Objective & Strategy	Concrete	Pictorial	Abstract
Combining two parts to make a whole: part-whole model	 <p>Use part whole model. Use cubes to add two numbers together as a group or in a bar.</p>	 <p>Use pictures to add two numbers together as a group or in a bar</p>	<p>$4 + 3 = 7$ Four is a part, 3 is a part and the whole is seven.</p> 
Starting at the bigger number and counting on	<p>Start with the larger number on the bead string and then count on to the smaller number 1 by 1 to find the answer.</p> 	<p>$12 + 5 = 17$ On the number line, start at the larger number and count on in 1's or in 1 jump to find the answer.</p> 	<p>$5 + 12 = 17$ Place the larger number in your head and count on the smaller number to find your answer.</p>
Regrouping to make 10. This is an essential skill for column addition later.	<p>$6 + 5 = 11$</p>  <p>Start with the bigger number and use the smaller number to make 10. Use ten frames.</p>	<p>Use pictures or a number line. Regroup or partition the smaller number using the part whole model to make 10</p>  <p>$3 + 9 =$ $9 + 5 = 14$</p>	<p>$7 + 4 = 11$ If I am at seven, how many more do I need to make 10 How many more do I add on now?</p>
Represent & use number bonds and related subtraction facts within 20	<p>2 more than 5.</p> 	 <p>$5 + 2 =$</p>	<p>Emphasis should be on the language '1 more than 5 is equal to 6.' '2 more than 5 is 7.' '8 is 3 more than 5.'</p>

Year 1

Addition

Objective & Strategy	Concrete	Pictorial	Abstract				
Adding multiples of ten	50 – 30 = 20 Model using dienes and bead strings 	Use representations for base ten  3 tens + 5 tens = _____ tens 30 + 50 = _____	20 + 30 = 50 70 = 50 + 20 20 + <div style="border: 1px solid orange; width: 20px; height: 20px; display: inline-block;"></div> = 60				
Using known number facts Part-part whole	Children explore way of making numbers within 20 	 <div style="display: flex; justify-content: space-around;"><div><div style="border: 1px solid black; padding: 2px 10px;">20</div><div style="display: flex; align-items: center; gap: 5px;"><div style="border: 1px solid black; width: 20px; height: 20px;"></div> + <div style="border: 1px solid black; width: 20px; height: 20px;"></div> = 20</div></div><div><div style="border: 1px solid black; padding: 2px 10px;">20</div><div style="display: flex; align-items: center; gap: 5px;"><div style="border: 1px solid black; width: 20px; height: 20px;"></div> - <div style="border: 1px solid black; width: 20px; height: 20px;"></div> = <div style="border: 1px solid black; width: 20px; height: 20px;"></div></div></div></div>	<div style="display: flex; justify-content: space-around;"><div><div style="border: 1px solid black; padding: 2px 10px;"></div> + 1 = 16</div><div>16 – 1 = <div style="border: 1px solid black; width: 20px; height: 20px;"></div></div></div> <div style="display: flex; justify-content: space-around;"><div>1 + <div style="border: 1px solid black; width: 20px; height: 20px;"></div> = 16</div><div>16 – <div style="border: 1px solid black; width: 20px; height: 20px;"></div> = 1</div></div>				
Using known facts	 	Children draw representations of H, T and O   	3 + 4 = 7 Leads to 30 + 40 = 70 Leads to 30 + 40 = 700				
Bar model	3 + 4 = 7 	7 + 3 = 10 <table border="1" style="width: 100%; text-align: center;"><tr><td colspan="2">10</td></tr><tr><td>7</td><td>3</td></tr></table>	10		7	3	23 + 25 = 48
10							
7	3						

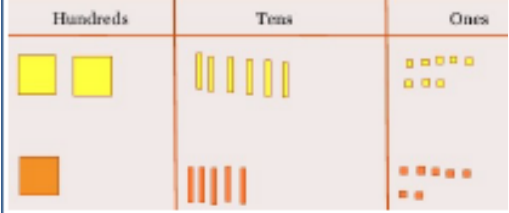
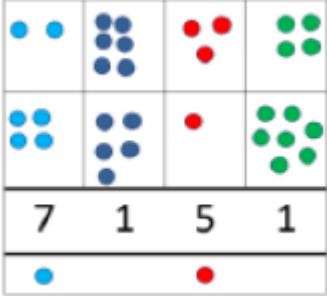
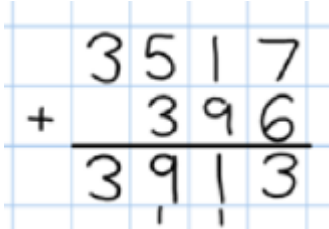

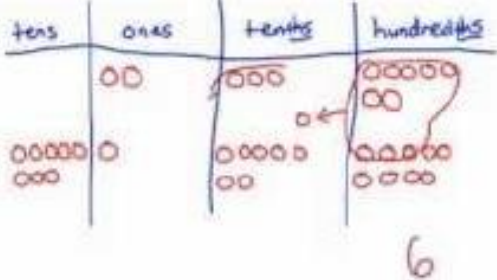
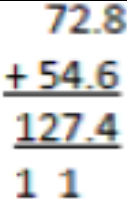
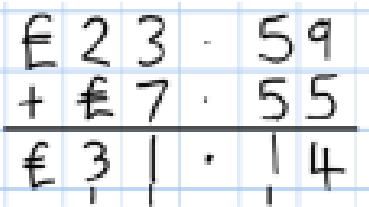
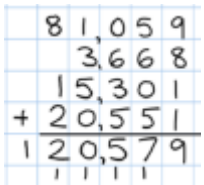
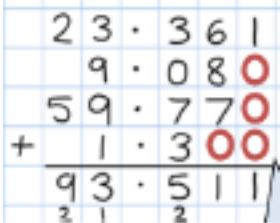
Addition

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Adding multiples of ten</p>	<p>$17 + 5 = 22$ Use ten frame to make 'magic ten'</p> <p>Children explore the pattern:</p> <p>$17 + 5 = 22$ $27 + 5 = 32$</p> 	<p>Use part-part whole and number line to model</p> <p>$17 + 5 = 22$</p> 	<p>$17 + 5 = 22$</p> <p>Explore related facts</p> <p>$17 + 5 = 22$ $5 + 17 = 22$ $22 - 17 = 5$ $22 - 5 = 17$</p> 
<p>Using known number facts</p> <p>Part-part whole</p>	<p>$25 + 10 = 35$ Explore that the 1s digit does not change</p> 	<p>$27 + 30$</p> <p>$+10 +10 +10$</p> 	<p>$27 + 10 = 37$</p> <p>$27 + 20 = 47$</p> <p>$27 + \square = 57$</p>
<p>Using known facts</p>	<p>Model using place value counters and numicon</p> 	<p>Use number line and bridge ten using part whole if necessary</p> 	<p>$25 + 47$</p> <p>$20 + 5$ $40 + 7$</p> <p>$20 + 40 = 60$ $5 + 7 = 12$ $60 + 12 = 72$</p>

Addition

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Column Addition- no regrouping</p> <p>Add two or three 2 or 3 digit numbers</p>	<p>Model using numicon</p> <p>Add together the ones first, then the tens</p> <p>Move to using place value counters</p>	<p>Children should move to drawing the counters using a tens and one frame</p>	<p>Add the ones first, then the tens and then the hundreds</p> $\begin{array}{r} 223 \\ + 114 \\ \hline 337 \end{array}$
<p>Column addition with regrouping</p>	<p>Exchange ten ones for a ten.</p> <p>Model using numicon and place value counters</p> <p>Calculations</p> $\begin{array}{r} 39 \\ + 15 \\ \hline 54 \end{array}$	<p>Children can draw a representation of the grid to further support and aid their learning (carrying the ten underneath the line)</p>	<p>Start by partitioning the numbers before the formal column method, to show the exchange</p> $\begin{array}{r} 20 + 5 \\ 40 + 8 \\ 60 + 13 = 73 \end{array}$ $\begin{array}{r} 536 \\ + 85 \\ \hline 621 \\ 11 \end{array}$

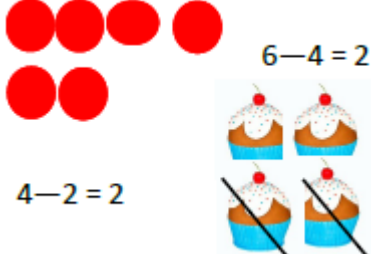
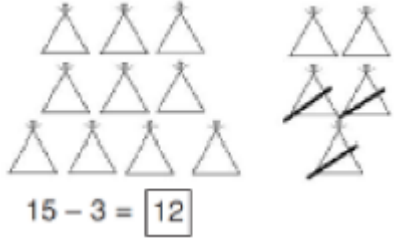
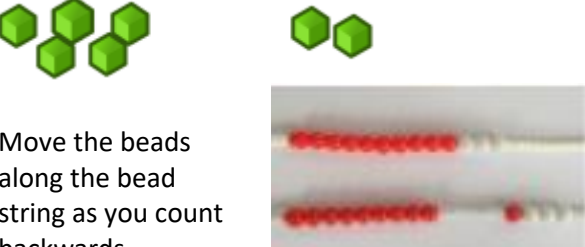
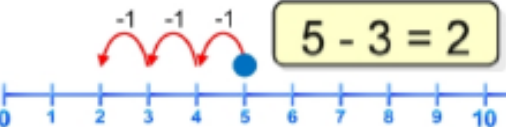
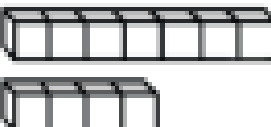
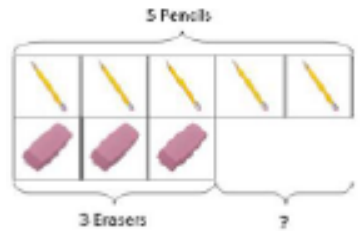
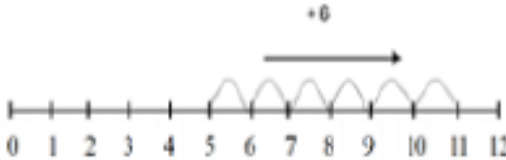
Addition

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Year 4</p> <p>Add numbers up to 4 digits</p>	<p>Children continue to use place value counters or dienes to add, exchanging ten ones for a ten, ten tens for a hundred and ten hundreds for a thousand</p> 	<p>Draw representations using place value grid</p> 	<p>Continue from previous learning to carry hundreds as well as tens. Make links to money and measures</p> 
<p>Year 5</p> <p>Add numbers with more than 4 digits</p> <p>Add decimals with more than 2d.p including money</p>	<p>(As year 4)</p> <p>Introduce decimals place counters and model exchange for addition</p> 	<p>Representations e.g. 2.37 + 81.79</p> 	 
<p>Year 6</p> <p>Add several numbers of increasing complexity (Including adding money, measure and decimals with varying decimal points)</p>	<p>As year 5</p>	<p>As year 5</p>	  <p>Insert zeros for place holders</p>

Year 4
Year 5
Year 6

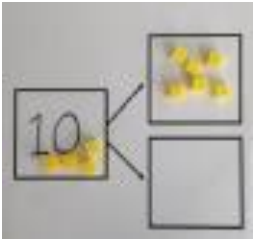
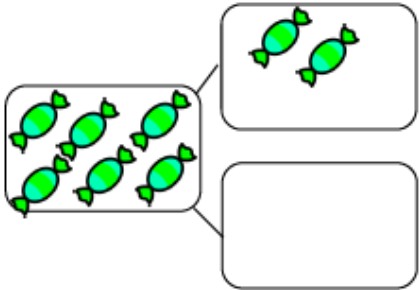
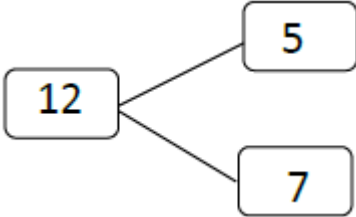


Subtraction

Key language: take away, less than, the difference, subtract, minus, fewer, decrease

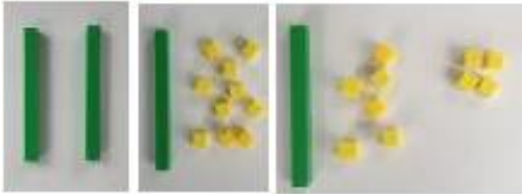



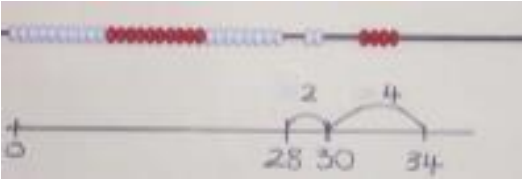

Objective & Strategy	Concrete	Pictorial	Abstract
Taking away ones	Using physical objects, counters, cubes etc. to show how objects can be taken away  $6 - 4 = 2$ $4 - 2 = 2$	Cross out drawn objects to show what has been taken away  $15 - 3 = 12$	$7 - 4 = 3$ $16 - 9 = 7$
Counting back	Move objects away from the group, counting backwards  Move the beads along the bead string as you count backwards	Count back in ones using a number line  $5 - 3 = 2$	Put 13 in your head, count back 4. What number are you at?
Finding the difference	Compare objects and amounts "Seven is 3 more than four" "I am 2 years older than my sister"  Lay objects to represent the bar model  5 Pencils 3 Erasers ?	Count on using a number line to find the difference  $+6$	Hannah has 12 sweets and her sister has 5. How many more does Hannah have than her sister?

Year 1

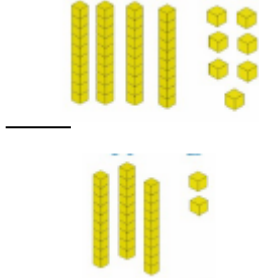
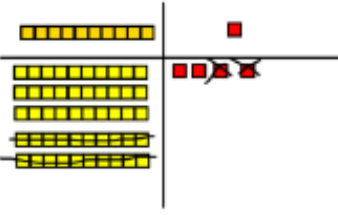

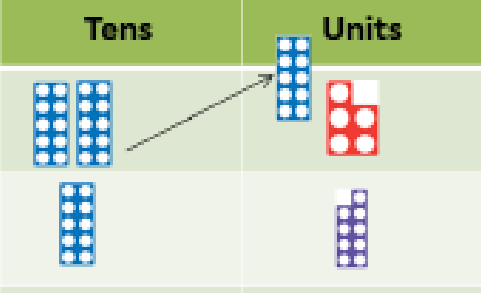
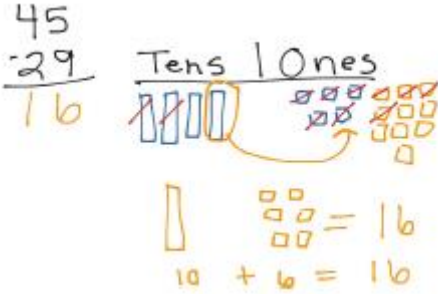


Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Represent and use number bonds and related subtraction facts within 20 Part-Part Whole model	<p>Make links to addition. Using the Part-Part Whole model to model the inverse</p>  <p>If 10 is the whole and 6 is one of the parts, what is the other part? $10 - 6 = 4$</p>	<p>Using pictorial representations to show the part</p> 	<p>Move to using numbers within the part whole model</p> 
Make 10	<p>14 - 9</p> <p>Make 14 on the ten-frame. Take 4 away to make ten, then take one more away so that you have taken 5</p> 	<p>13 - 7</p> <p>Jump back 3 first, then another 4. Use ten as the stopping point</p>  $13 - 7 = 6$	<p>How many do we take off first to get to 10? How many left to take off?</p> <p>16 - 8</p>

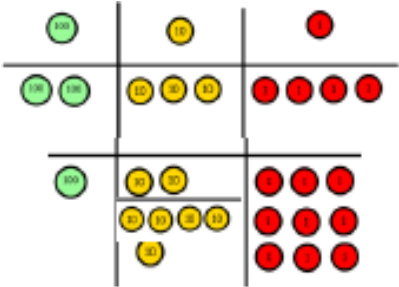
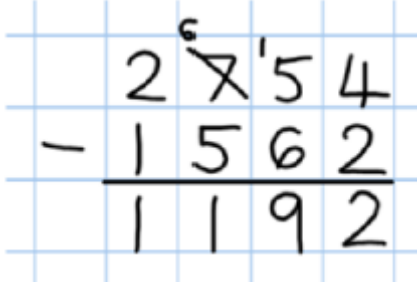
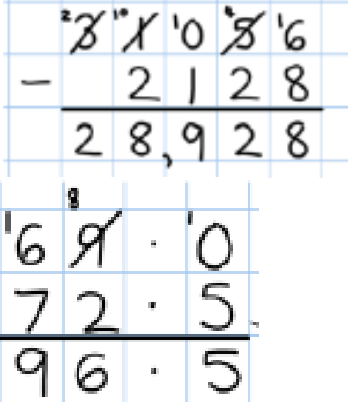
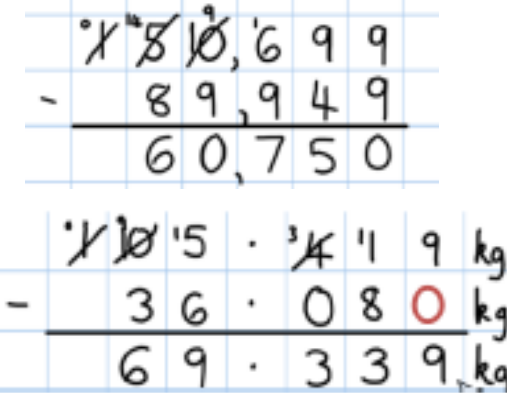
Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Regroup a ten into ones	Use a place value chart to show how to change a ten into ten ones, use the term 'take and make' 	$20 - 4 =$ 	$20 - 4 = 16$
Partitioning to subtract without regrouping 'Friendly numbers'	$34 - 13 = 21$ Use dienes to show how to partition the number when subtracting without regrouping 	Children draw representations of Dienes and cross off $43 - 21 = 22$ 	$43 - 21 = 22$
Make ten strategy <i>Progression should be crossing one ten, crossing more than one ten, crossing the hundreds</i>	$34 - 28$ Use a bead bar or bead strings to model counting to next ten and the rest 	Use a number line to count on to next ten and then the rest  'counting on' to find 'difference'	$93 - 76 = 17$

Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
Column subtraction without regrouping	<p>47 – 32</p> <p>Use base ten or numicon to model</p> 	<p>Draw representations to support understanding</p>  <p>Calculations</p> $\begin{array}{r} 47 \\ - 32 \\ \hline 15 \end{array}$	<p>Intermediate step may be needed to lead to clear subtraction understanding</p> $47 - 24 = 23$ $\begin{array}{r} 40 + 7 \\ - 20 + 4 \\ \hline 20 + 3 \end{array}$ 
Column subtraction with regrouping	<p>Start with base ten or numicon.</p> <p>Move to place value counters, modelling the exchange of a ten into ten ones.</p> <p>Use the phrase ‘take and make’ for exchange</p> 	<p>Children may draw base 10 or place value counters, crossing off accordingly</p> 	<p>Begin by partitioning into place value columns</p>  <p>Then move to formal method</p> 

Subtraction

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Subtracting tens and ones</p> <p>Y4 subtract with up to 4 digits</p> <p><i>Introduce decimal subtractions through context of money</i></p>	<p>234- 179</p> <p>Model process of exchange using numicon, base ten and then move on to place value counters</p> 	<p>Children to draw place value counters and show their exchange- See Year 3</p>	<p>Use the phrase ‘take and make’ for exchange</p> 
<p>Year 5</p> <p>Subtract with at least 4 digits, including money and measures</p> <p><i>Subtract with decimal values, including mixtures of integers and decimals and aligning the decimal</i></p>	<p>As year 4</p>	<p>Children to draw place value counters and show their exchange- See Year 3</p>	<p>Use zeros for place-holders</p> 
<p>Year 6</p> <p>Subtract with increasingly large and more complex numbers and decimal values</p>			

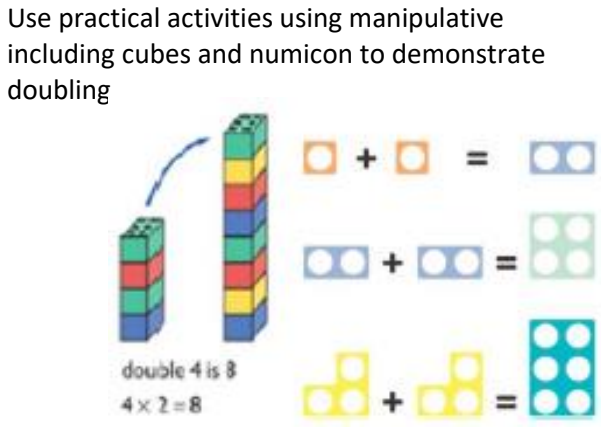
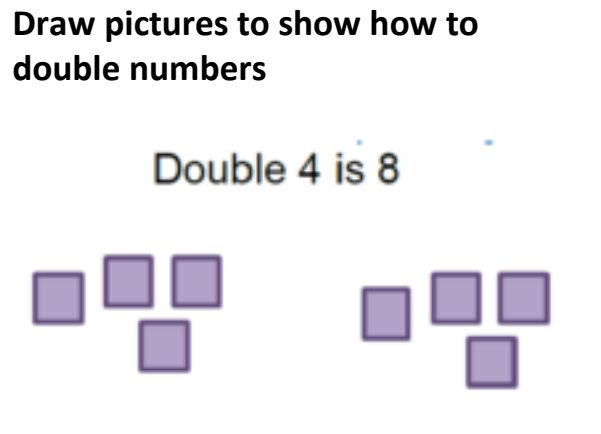
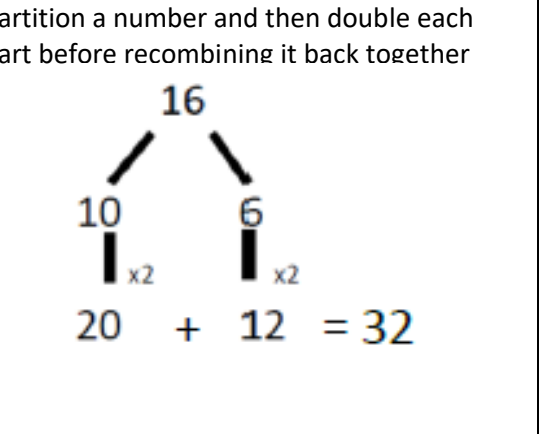

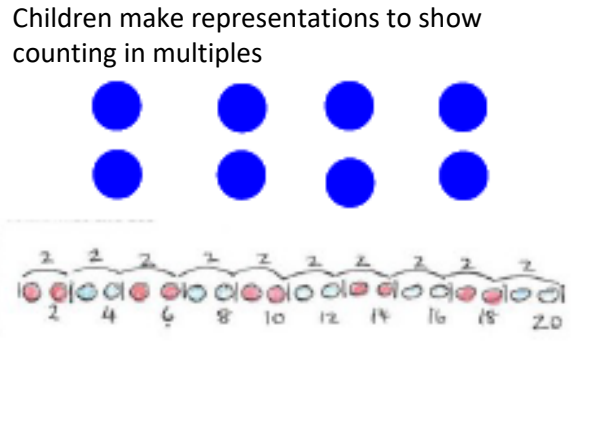
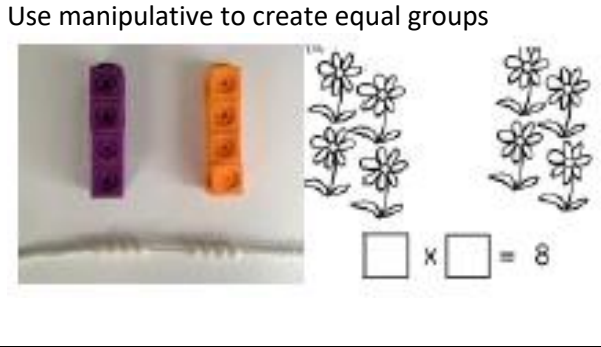

Year 4

Year 5

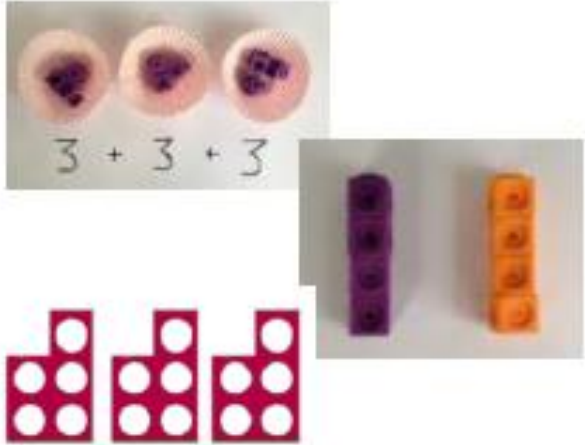
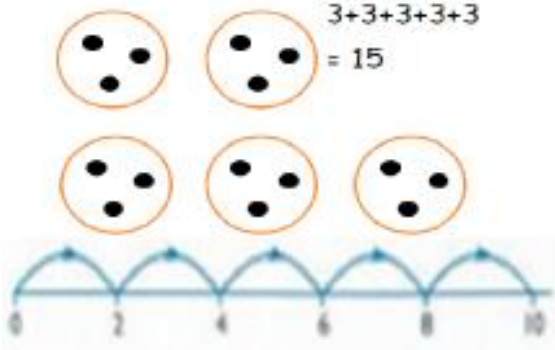


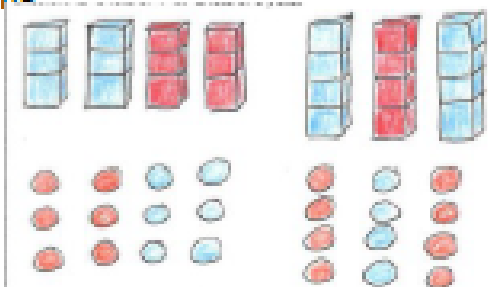
Year 6

Multiplication

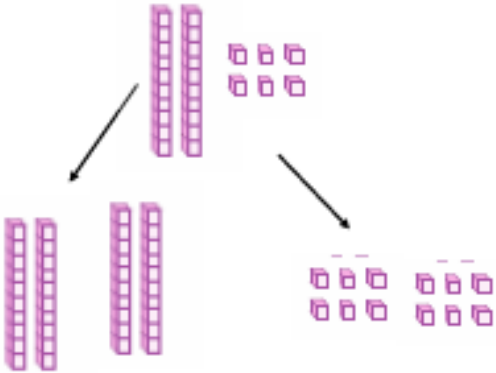
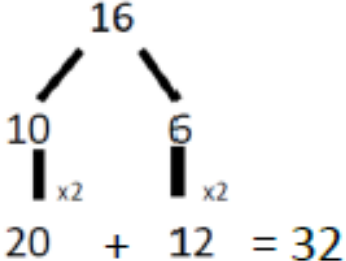


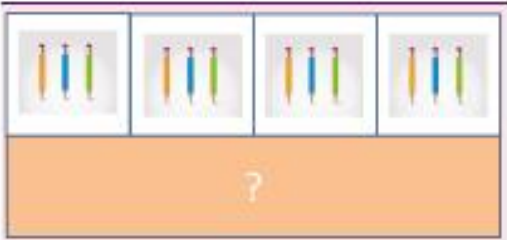



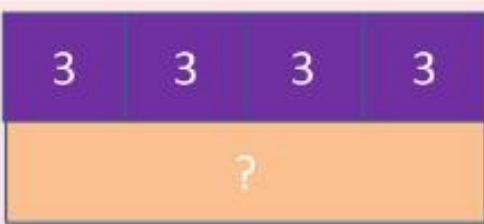
Key language: take away, less than, the difference, subtract, minus, fewer, decrease

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	<p>Use practical activities using manipulative including cubes and numicon to demonstrate doubling</p> 	<p>Draw pictures to show how to double numbers</p> <p>Double 4 is 8</p> 	<p>Partition a number and then double each part before recombining it back together</p> 
Counting in multiples	<p>Count the groups as children as skip counting, children may use their fingers as they are skip counting</p> 	<p>Children make representations to show counting in multiples</p> 	<p>Count in multiples of a number aloud Write sequences with multiples of numbers</p> <p>2, 4, 6, 8, 10</p> <p>5, 10, 15, 20, 25, 30</p>
Making equal groups and counting the total	<p>Use manipulative to create equal groups</p> 	<p>Draw and make representations</p> <p>Draw  to show 2 x 3 = 6</p>	<p>2 x 4 = 8</p>





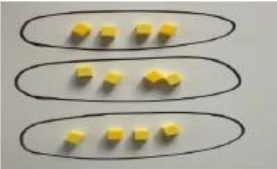
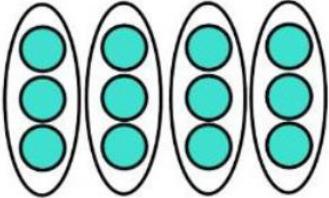
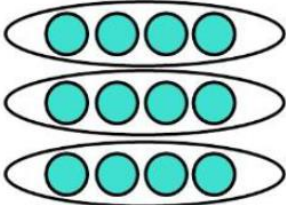



Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Repeated addition	<p>Use different objects to add different groups</p> 	<p>Use pictorial including number lines to solve problems</p> <p>There are 3 sweets in one bag. How many sweets are in 5 bags altogether?</p> 	<p>Write addition sentences to describe objects and pictures</p> 
Understanding arrays	<p>Use objects laid out in arrays to find the answers to two lots of 5, three lots of 2, etc.</p> 	<p>Draw representations of arrays to show understanding</p> 	<p>$3 \times 2 = 6$</p> <p>$2 \times 5 = 10$</p>

Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Doubling	<p>Model doubling using dienes and place value counters</p> <p>$40 + 12 = 52$</p> 	<p>Draw pictures and representations to show how to double numbers</p>	<p>Partition a number and then double each part before recombining it back together</p> 
Counting in multiples of 2, 3, 4, 5, 10 from 0 (repeated addition)	<p>Count the groups as children are skip counting, children may use their fingers. Use bar models</p>  <p>$5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40$</p>  	<p>Number lines, counting sticks and bar models should be used to show representation of counting in multiples</p>    	<p>Count in multiples of a number aloud</p> <p>Write sequences with multiples of numbers</p> <p>0, 2, 4, 6, 8, 10 0, 3, 6, 9, 12, 15 0, 5, 10, 15, 20, 25, 30</p> <p>$4 \times 3 = \square$</p>

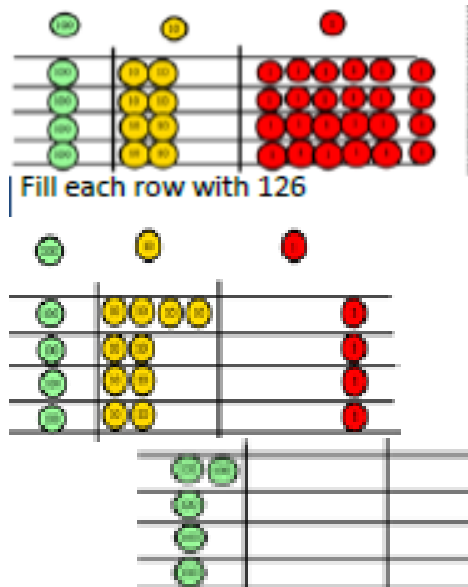
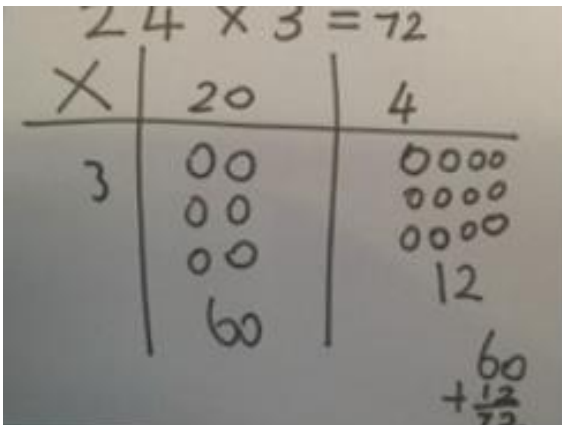
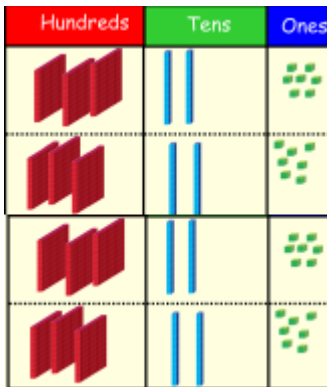
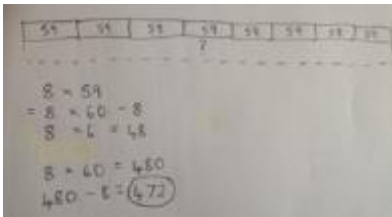

Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Multiplication is commutative	<p>Create arrays using counters, cubes and numicon</p>    <p>Pupils should understand that an array can represent different equations and that, as multiplication is commutative, the order of</p>  	<p>Use representations of arrays to show different calculations and explore commutativity.</p>  	<p>$12 = 3 \times 4$ $12 = 4 \times 3$</p> <div><p>Use an array to write multiplication sentences and reinforce repeated addition.</p><p>$5 + 5 + 5 = 15$ $3 + 3 + 3 + 3 + 3 = 15$ $5 \times 3 = 15$ $3 \times 5 = 15$</p></div>
Using the Inverse <i>This should be taught alongside division, so pupils learn how they work alongside each other.</i>		 <div><div><input type="text"/> \times <input type="text"/> = <input type="text"/></div><div><input type="text"/> \times <input type="text"/> = <input type="text"/></div><div><input type="text"/> \div <input type="text"/> = <input type="text"/></div><div><input type="text"/> \div <input type="text"/> = <input type="text"/></div></div>	<p>$2 \times 4 = 8$ $4 \times 2 = 8$ $8 \div 2 = 4$ $8 \div 4 = 2$ $8 = 2 \times 4$ $8 = 4 \times 2$ $2 = 8 \div 4$ $4 = 8 \div 2$</p> <p>Show all 8 related fact family sentences.</p>




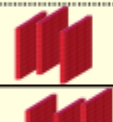


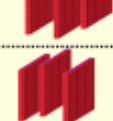


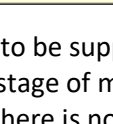
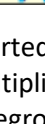




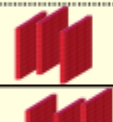


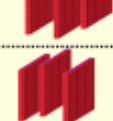


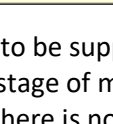
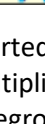




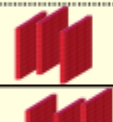


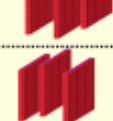


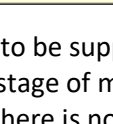
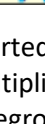

Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract
Grid method	<p>Show the links with arrays to first introduce the grid method</p> 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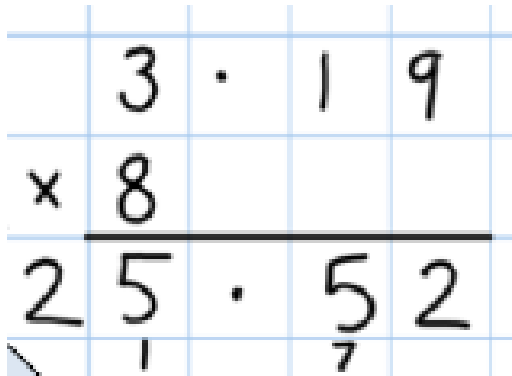
Multiplication

Objective & Strategy	Concrete	Pictorial	Abstract																										
<p>Grid method recap from year 3 for 2 digit x 1 digit</p> <p>Move on to multiplying 3 digit by 1 digit (Y4 expectation)</p>	<p>Use place value counters to show how we are finding groups of a number. We are multiplying by 4, so we need 4 rows</p> <div></div> <p>Calculations 4×126</p> <p>Add up each column, starting with the ones making any exchanges needed</p>	<p>Children can represent their work with place value counters in a way that they understand. They can draw the counters using colours to show different amounts of just use the circles in the different columns to show their thinking as illustrated below</p> <div></div>	<p>Start with multiplying by 1 digit numbers and showing the clear addition alongside the grid</p> <div><table><tr><td>x</td><td>30</td><td>5</td></tr><tr><td>7</td><td>210</td><td>35</td></tr></table><p>$210 + 35 = 245$</p></div>	x	30	5	7	210	35																				
x	30	5																											
7	210	35																											
<p>Column multiplication</p>	<p>Children can continue to be supported by place value counters at this stage of multiplication. This is initially done when there is no regrouping. $321 \times 2 = 642$</p> <div></div> <p>It is important at this stage that they always multiply the ones first. The corresponding long multiplication is modelled alongside</p>	<p>The grid method may be used to show how this relates to a formal written method.</p> <table><tr><td>x</td><td>300</td><td>20</td><td>7</td></tr><tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr></table> <p>Bar modelling and number lines can support learners when solving problems with multiplication alongside the formal written methods</p> <div></div>	x	300	20	7	4	1200	80	28	<div></div> <div><table><tr><td></td><td>327</td></tr><tr><td>x</td><td>4</td></tr><tr><td></td><td>28</td></tr><tr><td></td><td>80</td></tr><tr><td></td><td>1200</td></tr><tr><td></td><td>1308</td></tr></table><p>This may lead to a compact method.</p><div><table><tr><td></td><td>327</td></tr><tr><td>x</td><td>4</td></tr><tr><td></td><td>1308</td></tr></table></div></div>		327	x	4		28		80		1200		1308		327	x	4		1308
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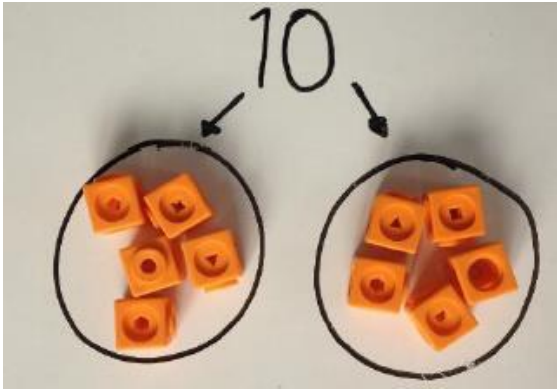

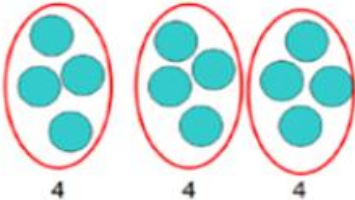
Multiplication

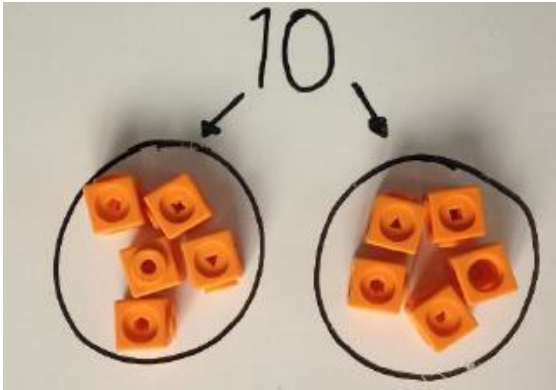
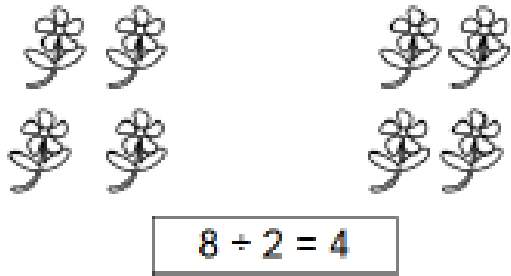
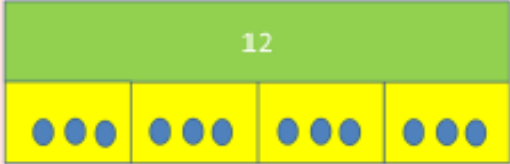
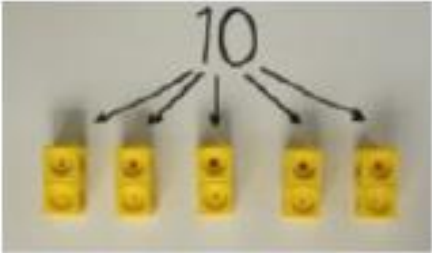
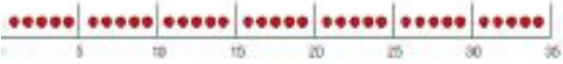
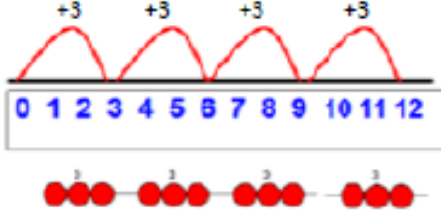
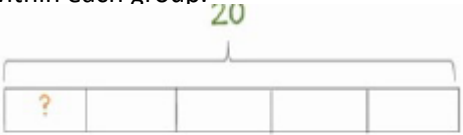
Objective & Strategy	Concrete	Pictorial	Abstract																											
Column multiplication for 3 and 4 digits x 1 digit	<p>It is important at this stage that they always multiply the ones first.</p> <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> <p>Children can continue to be supported by place value counters at this stage of multiplication. This is initially done when there is no regrouping. $321 \times 2 = 642$</p>	Hundreds	Tens	Ones													<table><tr><td>x</td><td>300</td><td>20</td><td>7</td></tr><tr><td>4</td><td>1200</td><td>80</td><td>28</td></tr></table>	x	300	20	7	4	1200	80	28	<div><div>$\begin{array}{r} 327 \\ \times 4 \\ \hline 28 \\ 80 \\ 1200 \\ \hline 1308 \end{array}$</div><div>$\begin{array}{r} 327 \\ \times 4 \\ \hline 1308 \\ \text{1} \quad \text{2} \end{array}$</div><p>This may lead to a compact method.</p></div>				
Hundreds	Tens	Ones																												
																														
																														
																														
																														
x	300	20	7																											
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Column multiplication	<p>Manipulatives may still be used with the corresponding long multiplication modelled alongside</p>	<p>Continue to use bar modelling to support problem solving</p> <table><tr><td></td><td>10</td><td>8</td></tr><tr><td>10</td><td>100</td><td>80</td></tr><tr><td>3</td><td>30</td><td>24</td></tr></table>		10	8	10	100	80	3	30	24	<div><table><tr><td></td><td>1</td><td>8</td></tr><tr><td>x</td><td>1</td><td>3</td></tr><tr><td></td><td>5</td><td>4</td></tr><tr><td></td><td>2</td><td></td></tr><tr><td>1</td><td>8</td><td>0</td></tr><tr><td>2</td><td>3</td><td>4</td></tr></table><p>18 x 3 on the first row (8 x 3 =24, carrying the 2 for 20, then 1 x 3) 18 x 10 on the 2nd row. Show multiplying by 10 by putting zero in units first</p></div> <div>$\begin{array}{r} 1234 \\ \times 16 \\ \hline 7404 \quad (1234 \times 6) \\ 12340 \quad (1234 \times 10) \\ \hline 19744 \end{array}$</div>		1	8	x	1	3		5	4		2		1	8	0	2	3	4
	10	8																												
10	100	80																												
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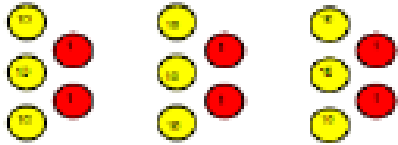
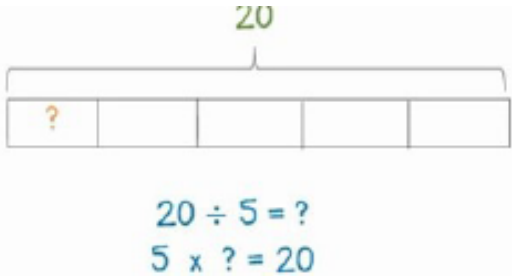

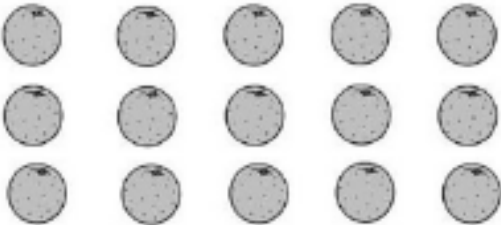
Multiplication

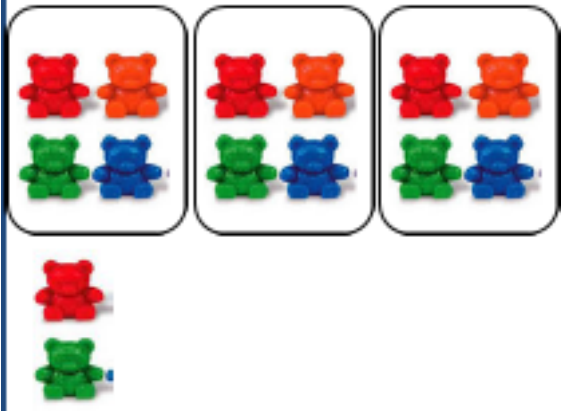


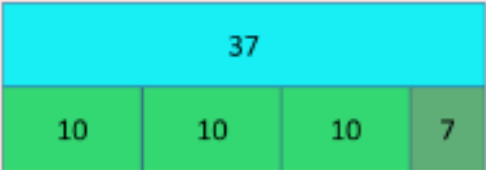

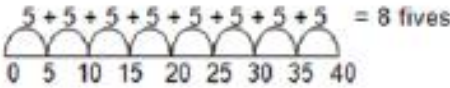
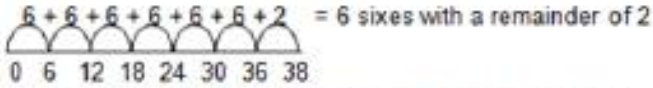
<u>Objective & Strategy</u>	<u>Concrete</u>	<u>Pictorial</u>	<u>Abstract</u>
Multiplying decimals up to 2 decimal places by a single digit			<p>Remind children that the single digit belongs in the units column. Line up the decimal points in the question and the answer.</p> 

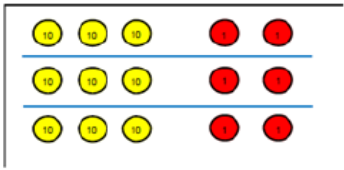
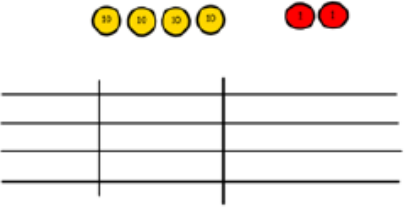

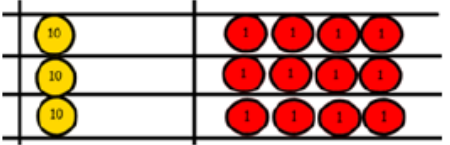
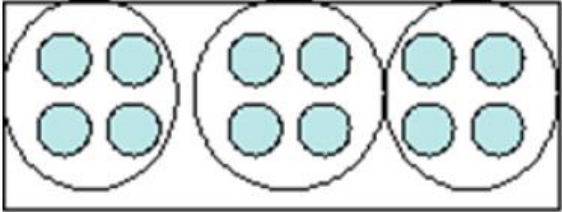
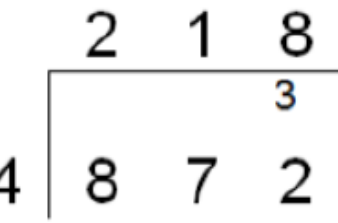
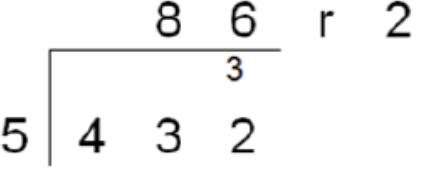
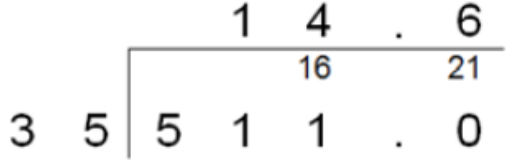
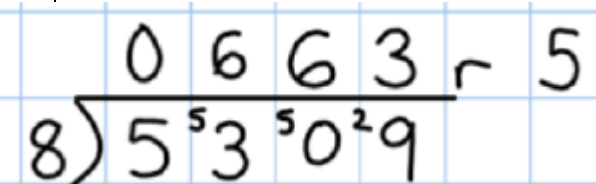
Year 6

Objective & Strategy	Concrete	Pictorial	Abstract
Division as sharing	<div></div> <div></div> <div><p>I have 10 cubes, can you share them equally into 2 groups?</p></div> <div></div>	<p>Children use pictures or shapes to share quantities</p> <p>8 shared between 2 is 4</p> <div></div> <p>Sharing:</p> <div></div> <p>12 shared between 3 is 4</p>	12 shared between 3 is 4

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Division as sharing</p>	<p>I have 10 cubes, can you share them equally into 2 groups?</p> 	<p>Children use pictures of shapes to share quantities</p>  <p>Children use bar modelling to show and support understanding</p>  <p>$12 \div 4 = 3$</p>	<p>$12 \div 3 = 4$</p>
<p>Division as grouping</p>	<p>Divide quantities into equal groups</p> <p>Use cubes, counter, objects or place value counters to aid understanding</p>  	<p>Use number lines for grouping</p>  <p>Think of the bar as a whole. Split it into the number of groups you are dividing by and work out how many would be within each group.</p>  <p>$20 \div 5 = ?$ $5 \times ? = 20$</p>	<p>$28 \div 7 = 4$</p> <p>Divide 28 into 7 groups. How many are in each group?</p>

Objective & Strategy	Concrete	Pictorial	Abstract
Division as grouping	<p>Use cubes, counters, objects or place value counters to aid understanding.</p>  <p>24 divided into groups of 6 = 4</p> $96 \div 3 = 32$ 	<p>Continue to use bar modelling to aid solving division problems.</p> 	<p>How many groups of 6 in 24?</p> $24 \div 6 = 4$
Division with arrays	<p>Link division to multiplication by creating an array and thinking about the number sentences that can be created.</p>  <p>Eg</p> $15 \div 3 = 5$ $5 \times 3 = 15$ $15 \div 5 = 3$ $3 \times 5 = 15$	<p>Draw an array and use lines to split the array into groups to make multiplication and division sentences</p> 	<p>Find the inverse of multiplication and division sentences by creating eight linking number sentences.</p> $7 \times 4 = 28$ $4 \times 7 = 28$ $28 \div 7 = 4$ $28 \div 4 = 7$ $28 = 7 \times 4$ $28 = 4 \times 7$ $4 = 28 \div 7$ $7 = 28 \div 4$

Objective & Strategy	Concrete	Pictorial	Abstract
Division with remainders	<p>$14 \div 3 =$ Divide objects between groups and see how many are left over</p> 	<p>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder</p>  <p>Draw dots and group them to divide an amount and clearly show a remainder.</p>  <p>Use bar models to show division with remainders.</p> 	<p>Complete written divisions and show the remainder using r.</p>  <p>Example without remainder: $40 \div 5$ Ask "How many 5s in 40?"</p>  <p>Example with remainder: $38 \div 6$</p>  <p>For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts.</p>

Objective & Strategy	Concrete	Pictorial	Abstract
<p>Short Division</p> <p>Divide at least 3 digit numbers by 1 digit</p>	<p>$96 \div 3$</p> <p>Tens Units</p> <p>3 2</p>  <p>Use place value counters to divide using the bus stop method alongside</p>  <p>$42 \div 3 =$</p> <p>Start with the biggest place value, we are sharing 40 into three groups. We can put 1 ten in each group and we have 1 ten left over.</p>  <p>We exchange this ten for ten ones and then share the ones equally among the groups.</p>  <p>We look at how much is in one group, which is 14</p>	<p>Students can continue to use drawn diagrams with dots or circles to help them divide numbers into equal groups.</p>  <p>Encourage them to move towards counting in multiples to divide more efficiently.</p>	<p>Begin with divisions that divide equally with no remainder.</p>  <p>Move onto divisions with a remainder.</p>  <p>Finally move into decimal places to divide the total accurately.</p>  

Long division- Year 6

Step 1- a remainder in the ones

$$\begin{array}{r} \text{h t o} \\ 041 \text{ R}1 \\ \hline 4 \overline{) 165} \end{array}$$

4 does not go into 1 (hundred). So combine the 1 hundred with the 6 tens (160).

4 goes into 16 four times.

4 goes into 5 once, leaving a remainder of 1.

$$\begin{array}{r} \text{th h t o} \\ 0400 \text{ R}7 \\ \hline 8 \overline{) 3207} \end{array}$$

8 does not go into 3 of the thousands. So combine the 3 thousands with the 2 hundreds (3,200).

8 goes into 32 four times ($3,200 \div 8 = 400$)

8 goes into 0 zero times (tens).

8 goes into 7 zero times, and leaves a remainder of 7.

$$\begin{array}{r} \text{h t o} \\ 061 \\ \hline 4 \overline{) 247} \\ \underline{-4} \\ 3 \end{array}$$

When dividing the ones, 4 goes into 7 one time. Multiply $1 \times 4 = 4$, write that four under the 7, and subtract. This finds us the remainder of 3.

Check: $4 \times 61 + 3 = 247$

$$\begin{array}{r} \text{th h t o} \\ 0402 \\ \hline 4 \overline{) 1609} \\ \underline{-8} \\ 1 \end{array}$$

When dividing the ones, 4 goes into 9 two times. Multiply $2 \times 4 = 8$, write that eight under the 9, and subtract. This finds us the remainder of 1.

Check: $4 \times 402 + 1 = 1,609$

Long division- Year 6

Step 2 - a remainder in the tens

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
$\begin{array}{r} \text{t o} \\ 2 \overline{) 58} \end{array}$ <p>Two goes into 5 two times, or 5 tens $\div 2 = 2$ whole tens -- but there is a remainder!</p>	$\begin{array}{r} \text{t o} \\ 2 \overline{) 58} \\ -4 \\ \hline 1 \end{array}$ <p>To find it, multiply $2 \times 2 = 4$, write that 4 under the five, and subtract to find the remainder of 1 ten.</p>	$\begin{array}{r} \text{t o} \\ 2 \overline{) 58} \\ -4 \downarrow \\ \hline 18 \end{array}$ <p>Next, drop down the 8 of the ones next to the leftover 1 ten. You combine the remainder ten with 8 ones, and get 18.</p>
1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
$\begin{array}{r} \text{t o} \\ 29 \\ 2 \overline{) 58} \\ -4 \\ \hline 18 \end{array}$ <p>Divide 2 into 18. Place 9 into the quotient.</p>	$\begin{array}{r} \text{t o} \\ 29 \\ 2 \overline{) 58} \\ -4 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$ <p>Multiply $9 \times 2 = 18$, write that 18 under the 18, and subtract.</p>	$\begin{array}{r} \text{t o} \\ 29 \\ 2 \overline{) 58} \\ -4 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$ <p>The division is over since there are no more digits in the dividend. The quotient is 29.</p>

Long division- Year 6

Step 2 - a remainder in any of the place values

1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
$\begin{array}{r} \text{h t o} \\ 1 \\ 2 \overline{) 278} \end{array}$ <p>Two goes into 2 one time, or 2 hundreds $\div 2 = 1$ hundred.</p>	$\begin{array}{r} \text{h t o} \\ 1 \\ 2 \overline{) 278} \\ -2 \\ \hline 0 \end{array}$ <p>Multiply $1 \times 2 = 2$, write that 2 under the two, and subtract to find the remainder of zero.</p>	$\begin{array}{r} \text{h t o} \\ 18 \\ 2 \overline{) 278} \\ -2 \downarrow \\ \hline 07 \end{array}$ <p>Next, drop down the 7 of the tens next to the zero.</p>
Divide.	Multiply & subtract.	Drop down the next digit.
$\begin{array}{r} \text{h t o} \\ 13 \\ 2 \overline{) 278} \\ -2 \\ \hline 07 \end{array}$ <p>Divide 2 into 7. Place 3 into the quotient.</p>	$\begin{array}{r} \text{h t o} \\ 13 \\ 2 \overline{) 278} \\ -2 \\ \hline 07 \\ -6 \\ \hline 1 \end{array}$ <p>Multiply $3 \times 2 = 6$, write that 6 under the 7, and subtract to find the remainder of 1 ten.</p>	$\begin{array}{r} \text{h t o} \\ 13 \\ 2 \overline{) 278} \\ -2 \\ \hline 07 \\ -6 \\ \hline 18 \end{array}$ <p>Next, drop down the 8 of the ones next to the 1 leftover ten.</p>
1. Divide.	2. Multiply & subtract.	3. Drop down the next digit.
$\begin{array}{r} \text{h t o} \\ 139 \\ 2 \overline{) 278} \\ -2 \\ \hline 07 \\ -6 \\ \hline 18 \end{array}$ <p>Divide 2 into 18. Place 9 into the quotient.</p>	$\begin{array}{r} \text{h t o} \\ 139 \\ 2 \overline{) 278} \\ -2 \\ \hline 07 \\ -6 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$ <p>Multiply $9 \times 2 = 18$, write that 18 under the 18, and subtract to find the remainder of zero.</p>	$\begin{array}{r} \text{h t o} \\ 139 \\ 2 \overline{) 278} \\ -2 \\ \hline 07 \\ -6 \\ \hline 18 \\ -18 \\ \hline 0 \end{array}$ <p>There are no more digits to drop down. The quotient is 139.</p>