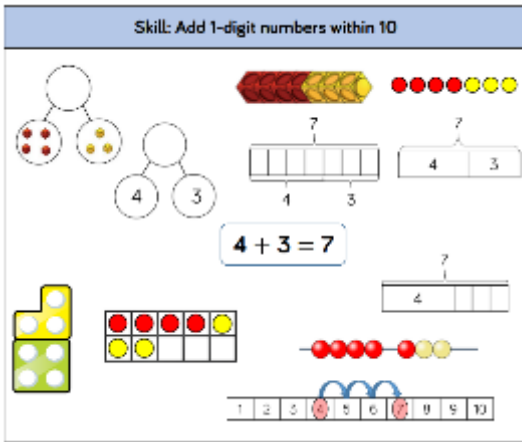
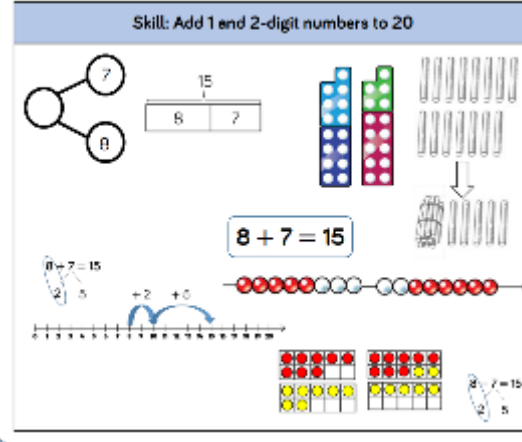
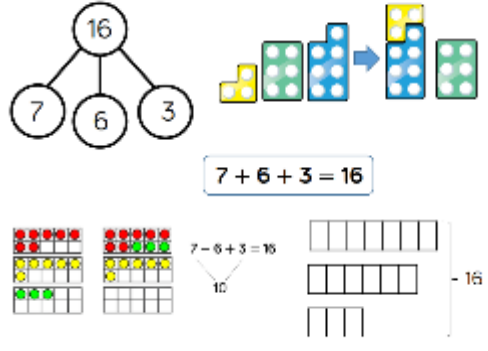
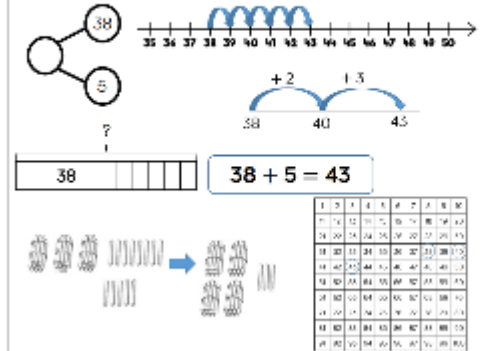
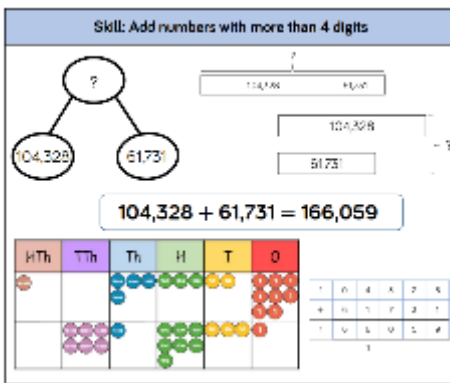
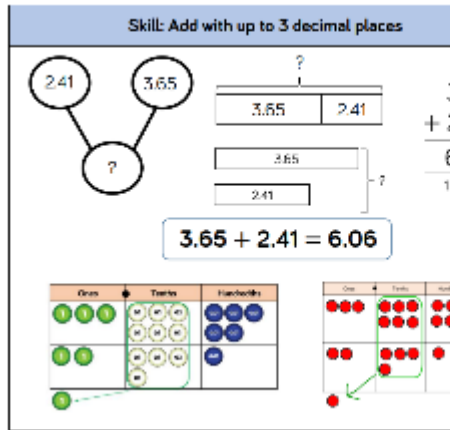


Addition

Skill	Year	Representations and models
Add two 1-digit numbers to 10	1	<p>Part-whole model Ten frames (within 10) Bar Model Bead strings (10) Number shapes Number tracks</p>  <p>Skill: Add 1-digit numbers within 10</p> <p>Year: 1</p> <p>When adding numbers to 10, children can explore both aggregation and augmentation.</p> <p>The part-whole model, discrete and continuous bar model, number shapes and ten frame support aggregation.</p> <p>The combination bar model, ten frame, bead string and number track all support augmentation.</p>
Add 1 and 2-digit numbers to 20.	1	<p>Part-whole model Bead Strings (20) Bar Model Number tracks Number shapes Number lines (labelled) Ten frames (within 20) Straws</p>  <p>Skill: Add 1 and 2-digit numbers to 20</p> <p>Year: 1/2</p> <p>When adding one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten. In Year 1, this is only done just by counting on. From Year 2, use different manipulatives can be used to represent this exchange alongside number lines to support children in understanding how to partition their jumps.</p>

Add three 1-digit numbers	2	Part-whole model Ten frames (within 20) Bar model Number shapes	<div data-bbox="1055 100 1771 579"> <div> Skill: Add three 1-digit numbers Year: 2 </div> <div>  <p>When adding three 1-digit numbers, children should be encouraged to look for number bonds to 10 or doubles to add the numbers more efficiently.</p> <p>This supports children in their understanding of commutativity.</p> <p>Multiplicatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.</p> </div> </div>
Add 1 and 2-digit numbers to 100	2	Part-whole model Number lines (blank) Bar model Straws Number lines (labelled) Hundred Square	<div data-bbox="1055 598 1771 1054"> <div> Skill: Add 1-digit and 2-digit numbers to 100 Year: 2/3 </div> <div>  <p>When adding single digits to a two-digit number, children should be encouraged to count on from the larger number.</p> <p>They should also apply their knowledge of number bonds to add more efficiently e.g. $6 + 5 = 11$ so $36 + 5 = 41$.</p> <p>Hundred squares and straws can support children to find the number bond to 10.</p> </div> </div>




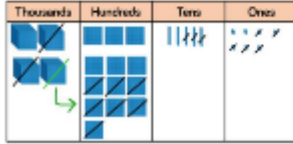
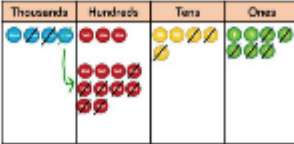
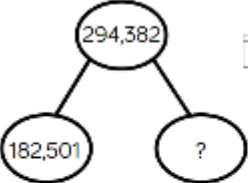

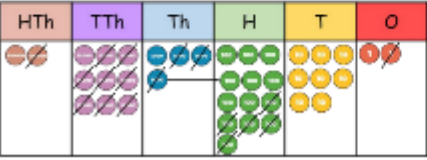
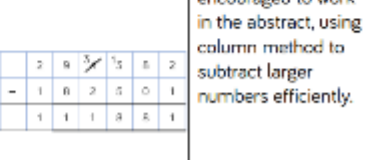
Add two 2-digit numbers	2	Part-whole model Base 10 Bar model Place value counters Number lines (blank) Straws	<div data-bbox="1093 140 1720 555"> <div> Skill: Add two 2-digit numbers to 100 Year: 2/3 </div> <div> </div> <div> Children can use a blank number line and other representations to count on to find the total. Encourage them to jump to multiples of 10 to become more efficient. From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient. </div> </div>
Add with up to 3-digits	3	Part-whole model Base 10 Bar model Place value counters Column addition	<div data-bbox="1093 611 1720 1010"> <div> Skill: Add numbers with up to 3 digits Year: 3 </div> <div> </div> <div> Base 10 and place value counters are the most effective manipulative when adding numbers with up to 3 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Place counters on a place value grid can also be used to support learning. </div> </div>
Add with up to 4-digits	4	Part-whole model Base 10 Bar model Place value counters Column addition	<div data-bbox="1093 1074 1720 1473"> <div> Skill: Add numbers with up to 4 digits Year: 4 </div> <div> </div> <div> Base 10 and place value counters are the most effective manipulative when adding numbers with up to 4 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Place counters on a place value grid can also be used to support learning. </div> </div>

Add with more than 4 digits	5	Part-whole model Place value counters Bar model Column addition	 <p>Skill: Add numbers with more than 4 digits</p> <p>Year: 5/6</p> <p>Place value counters and plain counters on a place value grid are the most effective manipulatives when adding numbers with more than 4 digits.</p> <p>At this stage, children should be encouraged to work in the abstract, using the column method to add larger numbers efficiently.</p> <p>$104,328 + 61,731 = 166,059$</p>
Add with up to 3 decimal places	5	Part-whole model Place value counters Bar model Column addition	 <p>Skill: Add with up to 3 decimal places</p> <p>Year: 5</p> <p>Place value counters and plain counters on a place value grid are the most effective manipulatives when adding decimals with 1, 2 and then 3 decimal places.</p> <p>Ensure children have experience of adding decimals with a variety of decimal places. This includes putting this into context when adding money and other measures.</p> <p>$3.65 + 2.41 = 6.06$</p>

Subtraction

Skill	Year	Representations and models
Subtract two 1-digit numbers to 10	1	<div> <div> Part-whole model Ten frames (within 10) Bar model Bead string (10) Number shapes Number tracks </div> <div> </div> </div>
Subtract 1 and 2-digit numbers to 20	1	<div> <div> Part-whole model Bead string (20) Bar model Number tracks Number shapes Number lines (labelled) Ten frames (within 20) Straws </div> <div> </div> </div>

Subtract 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled) Number lines (blank) Straws Hundred square	<div> <div> Skill: Subtract 1 and 2-digit numbers to 100 Year: 2/3 </div> <div> <p>Children can also use a blank number line to count back to find the difference. Encourage them to jump to multiples of 10 to become more efficient. From Year 3, encourage children to use the formal column method when calculating alongside straws, base 10 or place value counters. As numbers become larger, straws become less efficient.</p> </div> </div>
Subtract two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws Base 10 Place value counters	
Subtract with up to 3-digits	3	Part-whole model Bar model Base 10 Place value counters Column subtraction	<div> <div> Skill: Subtract numbers with up to 3 digits Year: 3 </div> <div> <p>Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 digits. Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method. Plain counters on a place value grid can also be used to support learning.</p> </div> </div>

Subtract with up to 4-digits	4	Part-whole model Bar model Base 10 Place value counters Column subtraction	<div data-bbox="1064 116 1888 643"> <div> <div>Skill: Subtract numbers with up to 4 digits</div> <div>Year: 4</div> </div> <div>    </div> <div> $4,357 - 2,735 = 1,622$ </div> <div>   </div> </div> <p>Base 10 and place value counters are the most effective manipulatives when subtracting numbers with up to 4 digits.</p> <p>Ensure children write out their calculation alongside any concrete resources so they can see the links to the written column method.</p> <p>Plain counters on a place value grid can also be used to support learning.</p>
Subtract with more than 4 digits	5	Part-whole model Bar model Place value counters Column subtraction	<div data-bbox="1064 678 1888 1204"> <div> <div>Skill: Subtract numbers with more than 4 digits</div> <div>Year: 5/6</div> </div> <div>   </div> <div> $294,382 - 182,501 = 111,881$ </div> <div>   </div> </div> <p>Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits.</p> <p>At this stage, children should be encouraged to work in the abstract, using column method to subtract larger numbers efficiently.</p>

Subtract with up to 3 decimal places	5	Part-whole model Bar model Place value counters Column subtraction	<div data-bbox="1061 113 1888 639"> <div> <div>Skill: Subtract with up to 3 decimal places</div> <div>Year: 5/6</div> </div> <div> </div> <div> <p>Place value counters and plain counters on a place value grid are the most effective manipulative when subtracting decimals with 1, 2 and then 3 decimal places.</p> <p>Ensure children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money and other measures.</p> </div> </div>
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NUMBER BONDS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
represent and use number bonds and related subtraction facts within 20	recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100				
<p>Continue the pattern $10 + 8 = 18$ $11 + 7 = 18$ Can you make up a similar pattern for the number 17? How would this pattern look if it included subtraction?</p> <p>Missing numbers $9 + \square = 10$ $10 - \square = 9$</p> <p>What number goes in the missing box?</p>	<p>Continue the pattern $90 = 100 - 10$ $80 = 100 - 20$ Can you make up a similar pattern starting with the numbers 74, 26 and 100?</p> <p>Missing numbers $91 + \square = 100$ $100 - \square = 89$</p> <p>What number goes in the missing box?</p>				

MENTAL CALCULATION

add and subtract one-digit and two-digit numbers to 20, including zero	add and 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 * adding three one-digit numbers	add and subtract numbers mentally, including: * a three-digit number and ones * a three-digit number and tens * a three-digit number and hundreds		add and subtract numbers mentally with increasingly large numbers	perform mental calculations, including with mixed operations and large numbers
Working backwards Through practical games on number tracks and lines ask questions such as "where have you landed?" and "what numbers would you need to throw to land on other given numbers?" What do you notice? $11 - 1 = 10$ $11 - 10 = 1$ Can you make up some other number sentences like this involving 3 different numbers?	True or false? Are these number sentences true or false? $73 + 40 = 113$ $98 - 18 = 70$ $46 + 77 = 123$ $92 - 67 = 35$ Give your reasons. Hard and easy questions Which questions are easy / hard? $23 + 10 =$ $93 + 10 =$ $54 + 9 =$ $54 + 1 =$ Explain why you think the hard questions are hard?	True or false? Are these number sentences true or false? $597 + 7 = 614$ $804 - 70 = 744$ $768 + 140 = 908$ Give your reasons. Hard and easy questions Which questions are easy / hard? $323 + 10 =$ $393 + 10 =$ $454 - 100 =$ $954 - 120 =$ Explain why you think the hard questions are hard?	True or false? Are these number sentences true or false? $6.7 + 0.4 = 6.11$ $8.1 - 0.9 = 7.2$ Give your reasons. Hard and easy questions Which questions are easy / hard? $13323 - 70 =$ $12893 + 300 =$ $19354 - 500 =$ $19954 + 100 =$ Explain why you think the hard questions are hard?	True or false? Are these number sentences true or false? $6.17 + 0.4 = 6.57$ $8.12 - 0.9 = 8.3$ Give your reasons. Hard and easy questions Which questions are easy / hard? $213323 - 70 =$ $512893 + 300 =$ $819354 - 500 =$ $319954 + 100 =$ Explain why you think the hard questions are hard?	True or false? Are these number sentences true or false? $6.32 + \square = 8$ $\square = 1.68$ Give your reasons. Hard and easy questions Which questions are easy / hard? $213323 - 70 =$ $512893 + 37 =$ $8193.54 - 5.9 =$ Explain why you think the hard questions are hard?
	Other possibilities $\square + \square + \square = 14$ What single digit numbers could go in the boxes? How many different ways can you do this?				

read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Written Methods)	show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot				use their knowledge of the order of operations to carry out calculations involving the four operations
Fact families Which four number sentences link these numbers? 12, 15, 3 What else do you know? If you know this: $12 - 9 = 3$ what other facts do you know? Missing symbols Write the missing symbols (+ - =) in these number sentences: $17 \square 3 \square 20$ $18 \square 20 \square 2$	Fact families Which four number sentences link these numbers? 100, 67, 33 What else do you know? If you know this: $87 = 100 - 13$ what other facts do you know? Missing symbols Write the missing symbols (+ - =) in these number sentences: $80 \square 20 \square 100$ $100 \square 70 \square 30$ $87 \square 13 \square 100$				Missing symbols Write the missing signs (+ - x ÷) in this number sentence: $6 \bigcirc 12.3 = 61.9 \bigcirc 11.9$ What else do you know? If you know this: $86.7 + 13.3 = 100$ what other facts do you know?

WRITTEN METHODS

read, write and interpret mathematical statements involving addition (+), subtraction (-) and equals (=) signs (appears also in Mental Calculation)		add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction	add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate	add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)	
<p>Convince me In my head I have two odd numbers with a difference of 2. What could they be? Convince me</p> <p>Missing numbers Fill in the missing numbers (using a range of practical resources to support) $12 + \square = 19$ $20 - \square = 3$</p>	<p>Convince me What digits could go in the boxes? $7 \square - 2 \square = 46$ Try to find all of the possible answers. How do you know you have got them all? Convince me</p>	<p>Convince me $\square\square + \square\square + \square\square$ The total is 201 Each missing digit is either a 9 or a 1. Write in the missing digits. Is there only one way of doing this or lots of ways? Convince me</p>	<p>Convince me $\square\square\square - 666 = 8\square5$ What is the largest possible number that will go in the rectangular box? What is the smallest? Convince me</p>	<p>Convince me $\square\square\square + 1475 = 6\square24$ What numbers go in the boxes? What different answers are there? Convince me</p>	<p>Convince me Three four digit numbers total 12435. What could they be? Convince me</p>

INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
	recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.	estimate the answer to a calculation and use inverse operations to check answers	estimate and use inverse operations to check answers to a calculation	use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy	use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy.
Making an estimate Pick (from a selection of number sentences) the ones where the answer is 8 or 9. Is it true that? Is it true that $3+4 = 4 + 3$?	Making an estimate Which of these number sentences have the answer that is between 50 and 60 $74 - 13$ $55 + 17$ $87 - 34$ Always, sometimes, never Is it always, sometimes or never true that if you add three numbers less than 10 the answer will be an odd number	Making an estimate Which of these number sentences have the answer that is between 50 and 60 $174 - 119$ $333 - 276$ $932 - 871$ Always, sometimes, never Is it always, sometimes or never true that if you subtract a multiple of 10 from any number the units digit of that number stays the same. Is it always, sometimes or never true that when you add two numbers together you will get an even number	Making an estimate Which of these number sentences have the answer that is between 550 and 600 $1174 - 611$ $3330 - 2779$ $9326 - 8777$ Always, sometimes, never Is it always sometimes or never true that the difference between two odd numbers is odd.	Making an estimate Which of these number sentences have the answer that is between 0.5 and 0.6 $11.74 - 11.18$ $33.3 - 32.71$ Always, sometimes, never Is it always, sometimes or never true that the sum of four even numbers is divisible by 4.	Making an estimate Circle the number that is the best estimate to $932.6 - 931.05$ 1.3 1.5 1.7 1.9 Always, sometimes, never Is it always, sometimes or never true that the sum of two consecutive triangular numbers is a square number

PROBLEM SOLVING

solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$	<p>solve problems with addition and subtraction:</p> <ul style="list-style-type: none"> * using concrete objects and pictorial representations, including those involving numbers, quantities and measures * applying their increasing knowledge of mental and written methods 	solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction	solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why	solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why	<p>solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why</p>
	<i>solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change (copied from Measurement)</i>				Solve problems involving addition, subtraction, multiplication and division

Multiplication

Skill	Year	Representations and models
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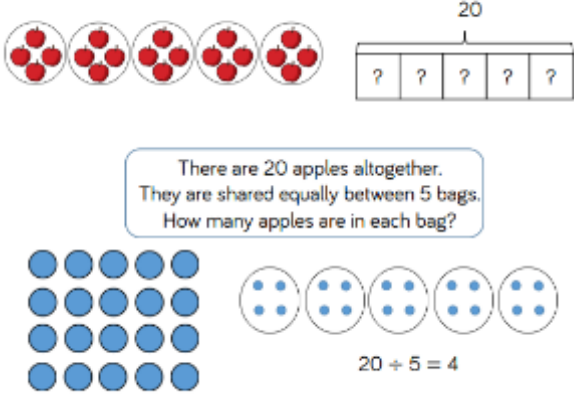
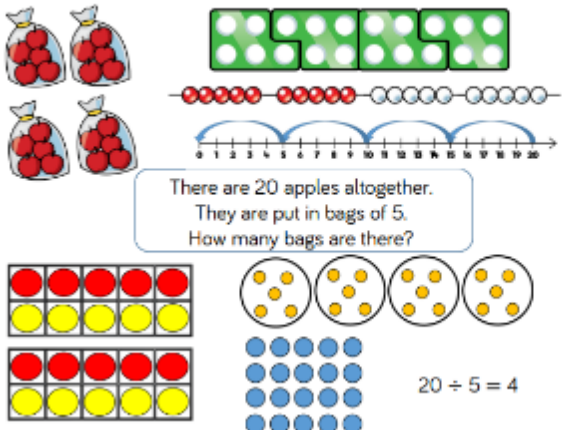
Solve one-step problems with multiplication	1/2	Bar Model Ten Frame Number Shapes Bead Strings Counters Number Lines	<div data-bbox="1070 124 1832 611"> <div> Skill: Solve 1-step problems using multiplication Year: 1/2 </div> <div> <p>One bag holds 5 apples. How many apples do 4 bags hold?</p> <p> $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$ $5 \times 4 = 20$ </p> </div> <div> Children represent multiplication as repeated addition in many different ways. In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally. In Year 2, children are introduced to the multiplication symbol. </div> </div>
Multiply 2-digit by 1-digit numbers	3/4	Place Value Counters Base 10 Expanded Written Method Short Written Method	<div data-bbox="1070 655 1877 1169"> <div> Skill: Multiply 2-digit numbers by 1-digit numbers Year: 3/4 </div> <div> <p>34 × 5 = 170</p> </div> <div> Informal methods and the expanded method are used in Year 3 before moving on to the short multiplication method in Year 4. Place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use times table knowledge. </div> </div>

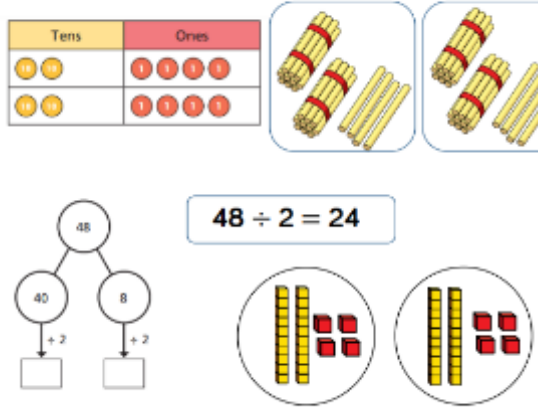
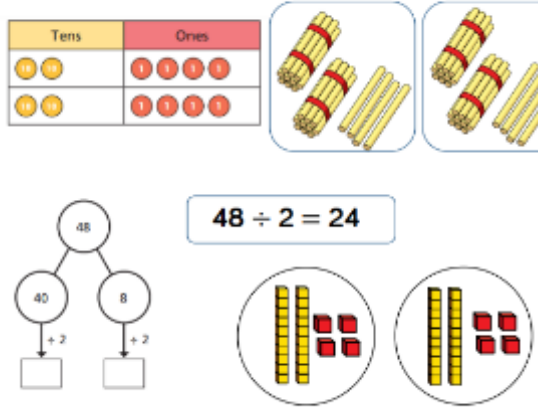
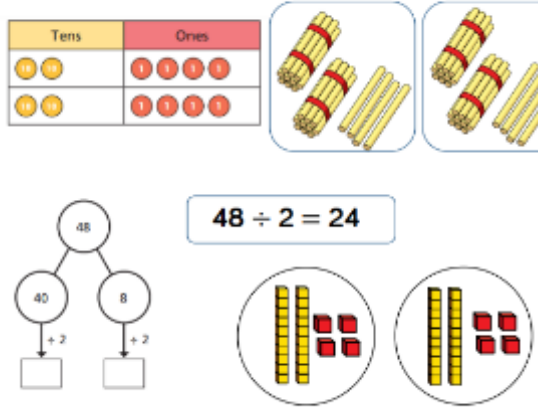
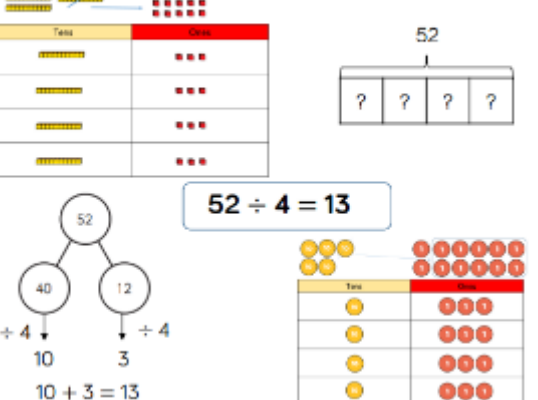
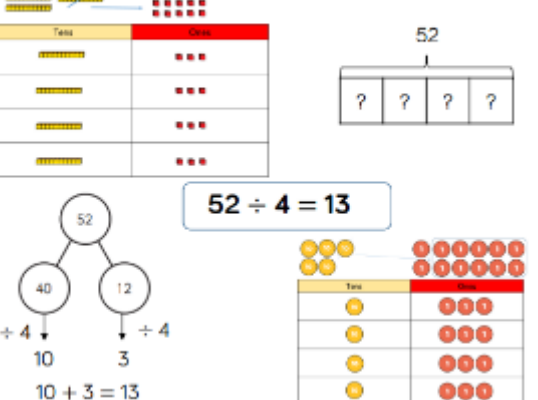
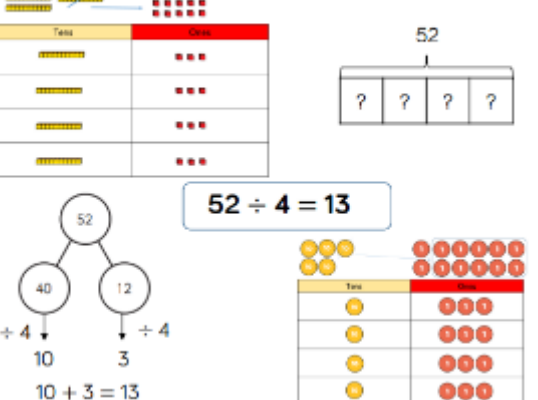
Multiply 3-digit by 1-digit numbers	4	Place Value Counters Base 10 Short Written Method	<div><div>Skill: Multiply 3-digit numbers by 1-digit numbers</div><div><div><div><div>Hundreds</div><div>Tens</div><div>Ones</div></div><div><div><div><div>200</div><div>200</div><div>200</div><div>200</div></div><div><div>40</div><div>40</div><div>40</div><div>40</div></div><div><div>5</div><div>5</div><div>5</div><div>5</div></div></div><div><div>245</div><div>4</div><div>980</div></div></div><div><table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>2</td><td>4</td><td>5</td></tr><tr><td>x</td><td></td><td></td><td>4</td></tr><tr><td></td><td>9</td><td>8</td><td>0</td></tr></table><div>1 2</div></div></div><div>245 × 4 = 980</div><div><div><div>Hundreds</div><div>Tens</div><div>Ones</div></div><div><div><div>200</div><div>200</div><div>200</div><div>200</div></div><div><div>40</div><div>40</div><div>40</div><div>40</div></div><div><div>5</div><div>5</div><div>5</div><div>5</div></div></div><div><div>245</div><div>4</div><div>980</div></div></div></div><div>When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method. Base 10 and place value counters continue to support the understanding of the written method. Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.</div></div>		H	T	O		2	4	5	x			4		9	8	0				
	H	T	O																				
	2	4	5																				
x			4																				
	9	8	0																				
Multiply 4-digit by 1-digit numbers	5	Place Value Counters Short Written Method	<div><div>Skill: Multiply 4-digit numbers by 1-digit numbers</div><div><div><div><div>Thousands</div><div>Hundreds</div><div>Tens</div><div>Ones</div></div><div><div><div><div>1000</div><div>1000</div><div>1000</div><div>1000</div></div><div><div>80</div><div>80</div><div>80</div><div>80</div></div><div><div>20</div><div>20</div><div>20</div><div>20</div></div><div><div>6</div><div>6</div><div>6</div><div>6</div></div></div><div><div>1826</div><div>3</div><div>5478</div></div></div><div><table><tr><td></td><td>Th</td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>1</td><td>8</td><td>2</td><td>6</td></tr><tr><td>x</td><td></td><td></td><td></td><td>3</td></tr><tr><td></td><td>5</td><td>4</td><td>7</td><td>8</td></tr></table><div>2 1</div></div></div><div>1,826 × 3 = 5,478</div><div><div><div>Thousands</div><div>Hundreds</div><div>Tens</div><div>Ones</div></div><div><div><div><div>1000</div><div>1000</div><div>1000</div><div>1000</div></div><div><div>80</div><div>80</div><div>80</div><div>80</div></div><div><div>20</div><div>20</div><div>20</div><div>20</div></div><div><div>6</div><div>6</div><div>6</div><div>6</div></div></div><div><div>1826</div><div>3</div><div>5478</div></div></div></div><div>When multiplying 4-digit numbers, place value counters are the best manipulative to use to support children in their understanding of the formal written method. If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the written method.</div></div></div>		Th	H	T	O		1	8	2	6	x				3		5	4	7	8
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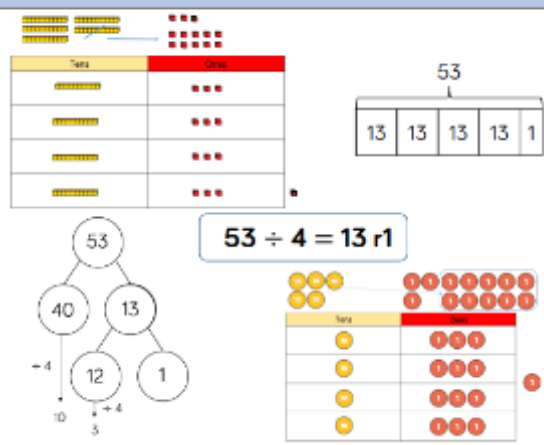
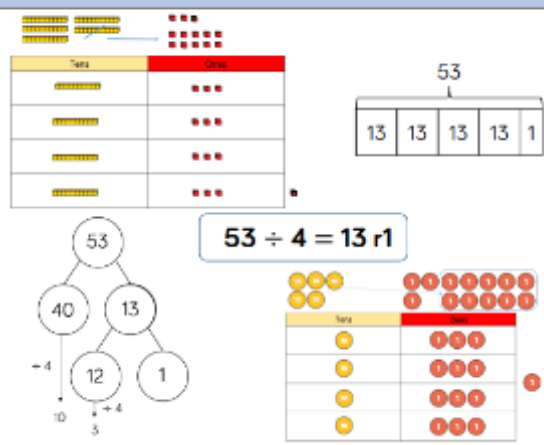
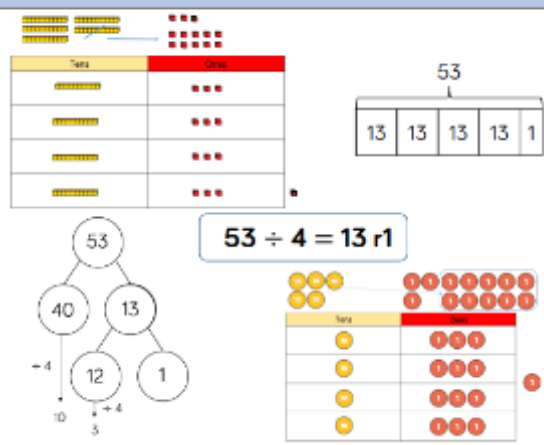
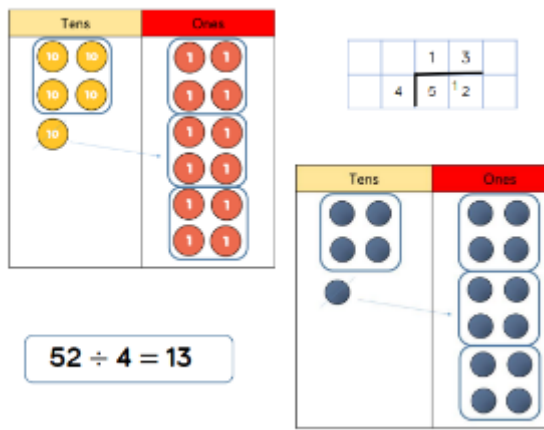
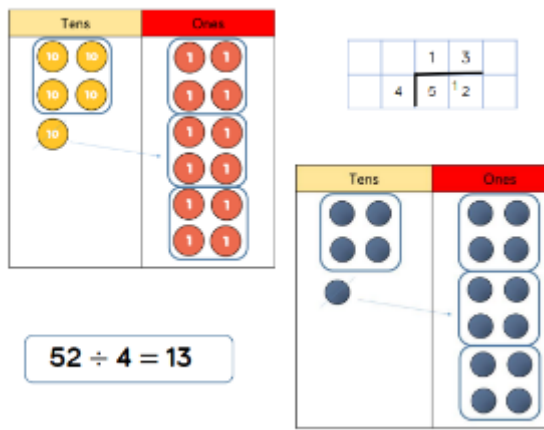
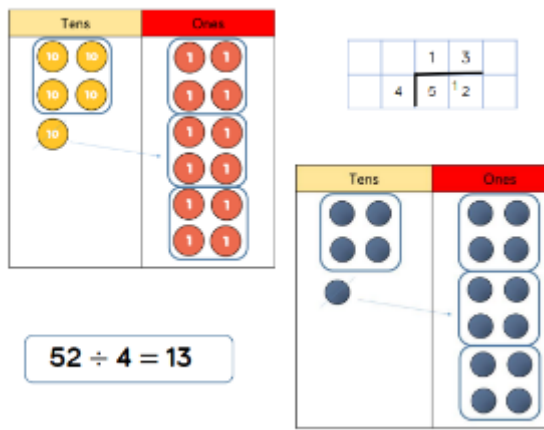
Multiply 2-digit by 4-digit numbers	5/6	Formal Written Method	<table><tr><th colspan="5">Skill: Multiply 4-digit numbers by 2-digit numbers</th><th>Year: 5/6</th></tr><tr><td colspan="5"><table><tr><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>2</td><td>7</td><td>3</td><td>9</td></tr><tr><td>x</td><td></td><td></td><td>2</td><td>8</td></tr><tr><td>2</td><td>1</td><td>9</td><td>1</td><td>2</td></tr><tr><td>₂</td><td>₅</td><td>₃</td><td>₇</td><td></td></tr><tr><td>5</td><td>4</td><td>7</td><td>8</td><td>0</td></tr><tr><td>₁</td><td></td><td>₁</td><td></td><td></td></tr><tr><td>7</td><td>6</td><td>6</td><td>9</td><td>2</td></tr><tr><td></td><td></td><td></td><td>₁</td><td></td></tr></table></td><td><p>When multiplying 4-digits by 2-digits, children should be confident in using the formal written method.</p><p>If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method.</p><p>Consider where exchanged digits are placed and make sure this is consistent.</p></td></tr><tr><td colspan="5"><div>2,739 × 28 = 76,692</div></td><td></td></tr></table>	Skill: Multiply 4-digit numbers by 2-digit numbers					Year: 5/6	<table><tr><th>TTh</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td>2</td><td>7</td><td>3</td><td>9</td></tr><tr><td>x</td><td></td><td></td><td>2</td><td>8</td></tr><tr><td>2</td><td>1</td><td>9</td><td>1</td><td>2</td></tr><tr><td>₂</td><td>₅</td><td>₃</td><td>₇</td><td></td></tr><tr><td>5</td><td>4</td><td>7</td><td>8</td><td>0</td></tr><tr><td>₁</td><td></td><td>₁</td><td></td><td></td></tr><tr><td>7</td><td>6</td><td>6</td><td>9</td><td>2</td></tr><tr><td></td><td></td><td></td><td>₁</td><td></td></tr></table>					TTh	Th	H	T	O		2	7	3	9	x			2	8	2	1	9	1	2	₂	₅	₃	₇		5	4	7	8	0	₁		₁			7	6	6	9	2				₁		<p>When multiplying 4-digits by 2-digits, children should be confident in using the formal written method.</p> <p>If they are still struggling with times tables, provide multiplication grids to support when they are focusing on the use of the method.</p> <p>Consider where exchanged digits are placed and make sure this is consistent.</p>	<div>2,739 × 28 = 76,692</div>					
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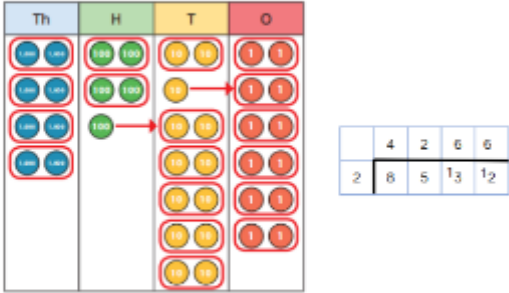
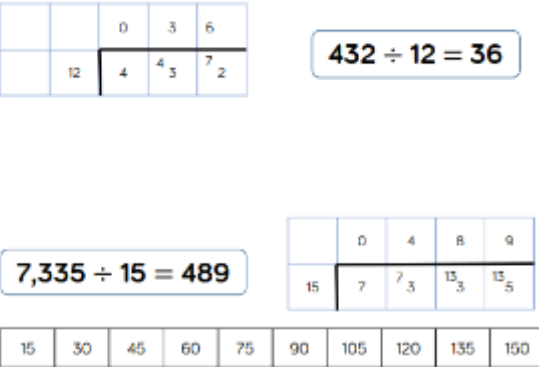
Skill	Year	Representations and models
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Solve one-step problems with division (sharing)	1/2	Bar Model Real Life Objects Arrays Counters	<div data-bbox="1070 124 1854 619"> <div> Skill: Solve 1-step problems using multiplication (sharing) Year: 1/2 </div> <div>  <p>There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?</p> $20 \div 5 = 4$ </div> <div> Children solve problems by sharing amounts into equal groups. In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally. In Year 2, children are introduced to the division symbol. </div> </div>
Solve one-step problems with division (grouping)	1/2	Real Life Objects Number Shapes Bead Strings Ten Frames Number Lines Arrays Counters	<div data-bbox="1070 667 1854 1161"> <div> Skill: Solve 1-step problems using division (grouping) Year: 1/2 </div> <div>  <p>There are 20 apples altogether. They are put in bags of 5. How many bags are there?</p> $20 \div 5 = 4$ </div> <div> Children solve problems by grouping and counting the number of groups. Grouping encourages children to count in multiples and links to repeated subtraction on a number line. They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division. </div> </div>

Divide 2-digits by 1-digit (no exchange sharing)	3	Straws Base 10 Bar Model Place Value Counters Part-whole model	<table><tr><th>Skill: Divide 2-digits by 1-digit (sharing with no exchange)</th><th>Year: 3</th></tr><tr><td></td><td><p>When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones.</p><p>Straws, Base 10 and place value counters can all be used to share numbers into equal groups.</p><p>Part-whole models can provide children with a clear written method that matches the concrete representation.</p></td></tr></table>	Skill: Divide 2-digits by 1-digit (sharing with no exchange)	Year: 3		<p>When dividing larger numbers, children can use manipulatives that allow them to partition into tens and ones.</p> <p>Straws, Base 10 and place value counters can all be used to share numbers into equal groups.</p> <p>Part-whole models can provide children with a clear written method that matches the concrete representation.</p>
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Divide 2-digits by 1-digit (sharing with remainders)	3/4	Straws Base 10 Bar Model Place Value Counters Part-Whole Model	<table><tr><th>Skill: Divide 2-digits by 1-digit (sharing with remainders)</th><th>Year: 3/4</th></tr><tr><td></td><td><p>When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones. Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made. Flexible partitioning in a part-whole model supports this method.</p></td></tr></table>	Skill: Divide 2-digits by 1-digit (sharing with remainders)	Year: 3/4		<p>When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones. Starting with the equipment outside the place value grid will highlight remainders, as they will be left outside the grid once the equal groups have been made. Flexible partitioning in a part-whole model supports this method.</p>
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Divide 2-digits by 1-digit (grouping)	4/5	Place Value Counters Counters Place Value Grid Written Short Division	<table><tr><th>Skill: Divide 2-digits by 1-digit (grouping)</th><th>Year: 5</th></tr><tr><td></td><td><p>When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor.</p><p>Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?'</p><p>Remainders can also be seen as they are left ungrouped.</p></td></tr></table>	Skill: Divide 2-digits by 1-digit (grouping)	Year: 5		<p>When using the short division method, children use grouping. Starting with the largest place value, they group by the divisor.</p> <p>Language is important here. Children should consider 'How many groups of 4 tens can we make?' and 'How many groups of 4 ones can we make?'</p> <p>Remainders can also be seen as they are left ungrouped.</p>
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Divide 3-digits by 1-digit (sharing with exchange)	4	Base 10 Bar Model Place Value Counters Part-whole Model	<div data-bbox="1064 113 1852 611"> <div> <div>Skill: Divide 3-digits by 1-digit (sharing)</div> <div>Year: 4</div> </div> <div> $844 \div 4 = 211$ </div> <div> $856 \div 4 = 214$ </div> <p>Children can continue to use place value counters to share 3-digit numbers into equal groups. Children should start with the equipment outside the place value grid before sharing the hundreds, tens and ones equally between the rows. This method can also help to highlight remainders. Flexible partitioning in a part-whole model supports this method.</p> </div>
Divide 3-digits by 1-digit (grouping)	4/5	Place Value Counters Counters Place Value Grid Written Short Division	<div data-bbox="1064 647 1852 1145"> <div> <div>Skill: Divide 3-digits by 1-digit (grouping)</div> <div>Year: 5</div> </div> <div> </div> <div> $856 \div 4 = 214$ </div> <p>Children can continue to use grouping to support their understanding of short division when dividing a 3-digit number by a 1-digit number.</p> <p>Place value counters or plain counters can be used on a place value grid to support this understanding. Children can also draw their own counters and group them through a more pictorial method.</p> </div>

Divide 4-digits by 1-digit (grouping)	5	Place Value Counters Place Value Grid Written Short Division	<div data-bbox="1070 113 1859 611"> <div> Skill: Divide 4-digits by 1-digit (grouping) Year: 5 </div> <div>  </div> <div> Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit. Children can also draw their own counters and group them through a more pictorial method. </div> <div> Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges. </div> </div>
Divide multi-digits by 2-digits (short division)	6	Written Short Division List of Multiples	<div data-bbox="1070 635 1848 1133"> <div> Skill: Divide multi digits by 2-digits (short division) Year: 6 </div> <div>  </div> <div> When children begin to divide up to 4-digits by 2-digits, written methods become the most accurate as concrete and pictorial representations become less effective. Children can write out multiples to support their calculations with larger remainders. Children will also solve problems with remainders where the quotient can be rounded as appropriate. </div> </div>

Divide multi-digits by 2-digits (long division)	6	Written Long Division List of Multiples	<table><tr><th>Skill: Divide multi-digits by 2-digits (long division)</th><th>Year: 6</th></tr><tr><td><div><table><tr><td></td><td></td><td>0</td><td>3</td><td>6</td></tr><tr><td>1</td><td>2</td><td>4</td><td>3</td><td>2</td></tr><tr><td></td><td></td><td>3</td><td>6</td><td>0</td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td></tr><tr><td></td><td></td><td></td><td></td><td>0</td></tr></table><div>(x30)</div><div>(x6)</div></div><div><div>12 × 1 = 12</div><div>12 × 2 = 24</div><div>12 × 3 = 36</div><div>12 × 4 = 48</div><div>12 × 5 = 60</div><div>12 × 6 = 72</div><div>12 × 7 = 84</div><div>12 × 8 = 96</div><div>12 × 9 = 108</div><div>12 × 10 = 120</div></div><div>432 ÷ 12 = 36</div></td><td><p>Children can also divide by 2-digit numbers using long division.</p><p>Children can write out multiples to support their calculations with larger remainders.</p><p>Children will also solve problems with remainders where the quotient can be rounded as appropriate.</p></td></tr></table>	Skill: Divide multi-digits by 2-digits (long division)	Year: 6	<div><table><tr><td></td><td></td><td>0</td><td>3</td><td>6</td></tr><tr><td>1</td><td>2</td><td>4</td><td>3</td><td>2</td></tr><tr><td></td><td></td><td>3</td><td>6</td><td>0</td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td></tr><tr><td></td><td></td><td></td><td>7</td><td>2</td></tr><tr><td></td><td></td><td></td><td></td><td>0</td></tr></table><div>(x30)</div><div>(x6)</div></div> <div><div>12 × 1 = 12</div><div>12 × 2 = 24</div><div>12 × 3 = 36</div><div>12 × 4 = 48</div><div>12 × 5 = 60</div><div>12 × 6 = 72</div><div>12 × 7 = 84</div><div>12 × 8 = 96</div><div>12 × 9 = 108</div><div>12 × 10 = 120</div></div> <div>432 ÷ 12 = 36</div>			0	3	6	1	2	4	3	2			3	6	0				7	2				7	2					0	<p>Children can also divide by 2-digit numbers using long division.</p> <p>Children can write out multiples to support their calculations with larger remainders.</p> <p>Children will also solve problems with remainders where the quotient can be rounded as appropriate.</p>
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MULTIPLICATION & DIVISION FACTS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<i>count in multiples of twos, fives and tens</i> (copied from Number and Place Value)	<i>count in steps of 2, 3, and 5 from 0, and in tens from any number, forward or backward</i> (copied from Number and Place Value)	<i>count from 0 in multiples of 4, 8, 50 and 100</i> (copied from Number and Place Value)	<i>count in multiples of 6, 7, 9, 25 and 1000</i> (copied from Number and Place Value)	<i>count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000</i> (copied from Number and Place Value)	
	recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers	recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables	recall multiplication and division facts for multiplication tables up to 12×12		
MENTAL CALCULATION					
		write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Written Methods)	use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together three numbers	multiply and divide numbers mentally drawing upon known facts	perform mental calculations, including with mixed operations and large numbers
	show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot		recognise and use factor pairs and commutativity in mental calculations (appears also in Properties of Numbers)	multiply and divide whole numbers and those involving decimals by 10, 100 and 1000	<i>associate a fraction with division and calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction (e.g. $\frac{3}{8}$)</i> (copied from Fractions)

WRITTEN CALCULATION					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication (\times), division (\div) and equals (=) signs	write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods (appears also in Mental Methods)	multiply two-digit and three-digit numbers by a one-digit number using formal written layout	multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers	multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
				divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context	divide numbers up to 4-digits by a two-digit whole number using the formal written method of short division where appropriate for the context divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
					<i>use written division methods in cases where the answer has up to two decimal places (copied from Fractions (including decimals))</i>

PROPERTIES OF NUMBERS: MULTIPLES, FACTORS, PRIMES, SQUARE AND CUBE NUMBERS					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
			recognise and use factor pairs and commutativity in mental calculations (repeated)	<p>identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers.</p> <p>know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers</p> <p>establish whether a number up to 100 is prime and recall prime numbers up to 19</p>	<p>identify common factors, common multiples and prime numbers</p> <p><i>use common factors to simplify fractions; use common multiples to express fractions in the same denomination</i> (copied from Fractions)</p>
				<p>recognise and use square numbers and cube numbers, and the notation for squared (2) and cubed (3)</p>	<p><i>calculate, estimate and compare volume of cubes and cuboids using standard units, including centimetre cubed (cm^3) and cubic metres (m^3), and extending to other units such as mm^3 and km^3</i> (copied from Measures)</p>

ORDER OF OPERATIONS

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
					use their knowledge of the order of operations to carry out calculations involving the four operations
INVERSE OPERATIONS, ESTIMATING AND CHECKING ANSWERS					
		<i>estimate the answer to a calculation and use inverse operations to check answers</i> (copied from Addition and Subtraction)	<i>estimate and use inverse operations to check answers to a calculation</i> (copied from Addition and Subtraction)		use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy

PROBLEM SOLVING					
Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of the teacher	solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts	solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects	solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects	solve problems involving multiplication and division including using their knowledge of factors and multiples, squares and cubes	solve problems involving addition, subtraction, multiplication and division
				solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign	
				solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates	<i>solve problems involving similar shapes where the scale factor is known or can be found</i> (copied from Ratio and Proportion)