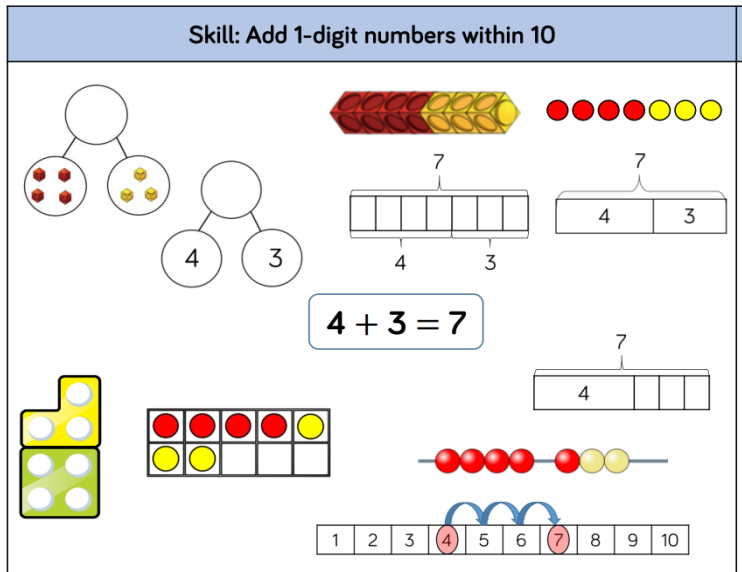
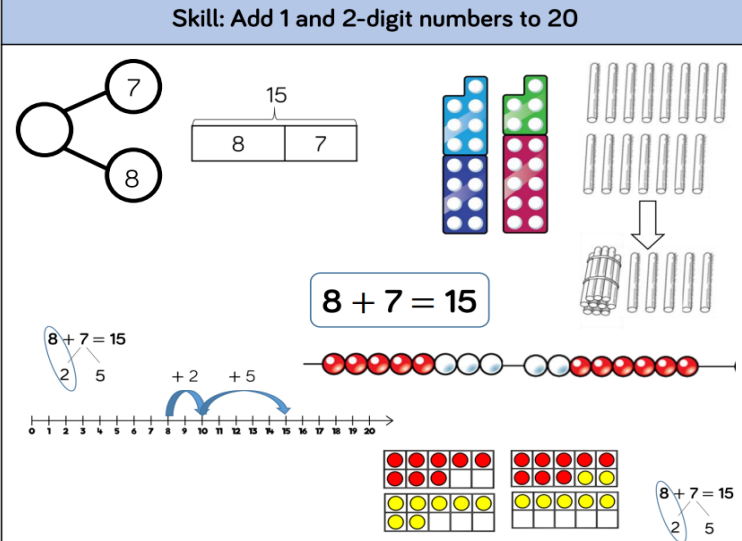


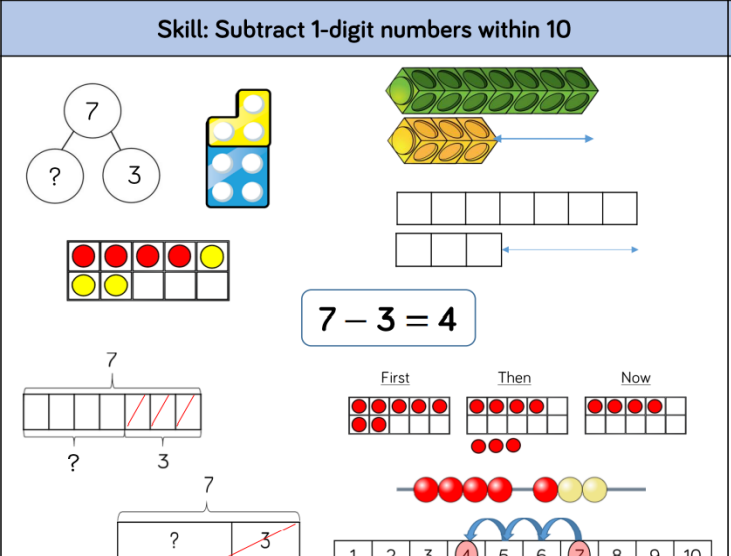
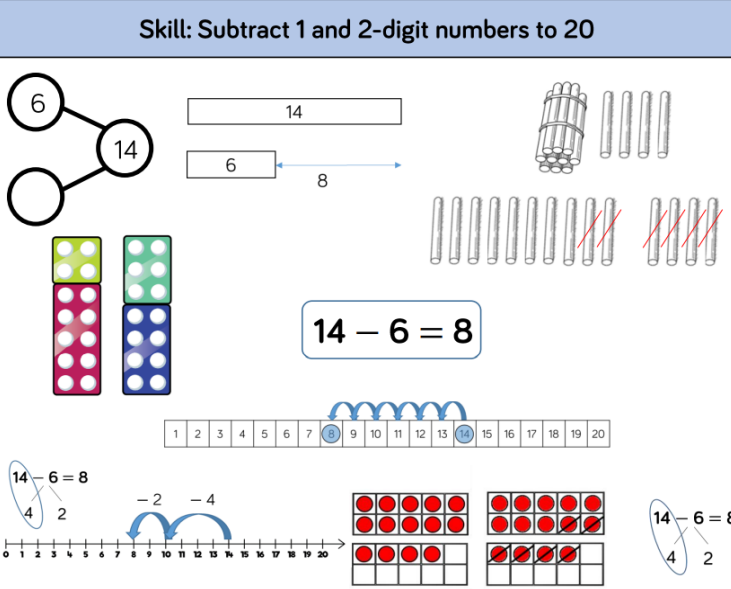


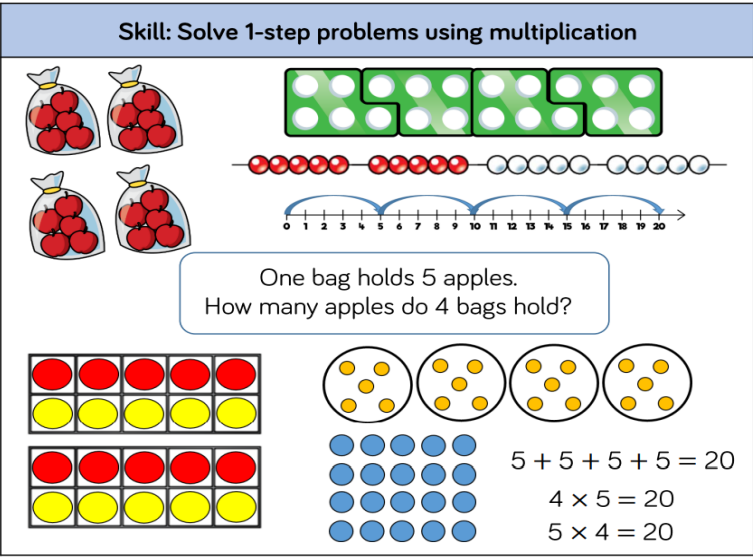
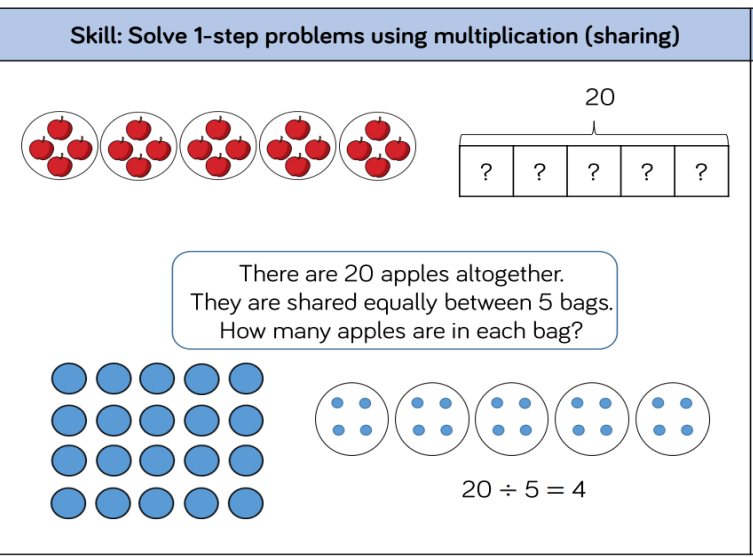
**2023 - 2024**

**Maths Calculation Policy**

APPROVED BY	DATE OF APPROVAL
Miss Guest (headteacher) I.E.B	
REVIEW DUE BY	GOVERNOR LINK
September 2024	Mr J Painter (Chair of I.E.B)

Year 1	Addition		
Skill	Representation and models		
<p><b>Add two 1-digit numbers to 10</b></p>	<p>When adding numbers to 10, children explore both aggregation and augmentation.</p> <p>The part-whole model, discrete and continuous bar model, number shapes and tens frames support aggregation</p> <p>The combination bar model, ten frame, bead string and number track all support augmentation</p>	<p>Part whole model</p> <p>Bar model</p> <p>Number shapes (within 10)</p> <p>Tens frames (within 10)</p> <p>Bead strings</p> <p>Number tracks</p>	<p><b>Skill: Add 1-digit numbers within 10</b></p> 
<p><b>Add 1- and 2-digit numbers to 20</b></p>	<p>When adding 1-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten.</p> <p>Different manipulatives can be used to represent this exchange. Use concrete resources, alongside number lines to support children in understanding how to partition their jumps</p>	<p>Part whole model</p> <p>Bar model</p> <p>Number shapes (within 10)</p> <p>Tens frames (within 10)</p> <p>Bead strings</p> <p>Number tracks</p>	<p><b>Skill: Add 1 and 2-digit numbers to 20</b></p> 

Year 1	Subtraction		
Skill	Representation and models		
<p><b>Subtract two 1-digit numbers to 10</b></p>	<p>The part - whole models, bar models, tens frames, and number shapes support partitioning</p> <p>Tens frame, number tracks, single bar models, and bead string support reduction</p> <p>Cubes and bar models with two bars can support finding the difference.</p>	<p>Part - whole models</p> <p>Bar Models</p> <p>Number shapes</p> <p>Tens frames (within 10)</p> <p>Bead strings (10)</p> <p>Number tracks</p>	<p><b>Skill: Subtract 1-digit numbers within 10</b></p> 
<p><b>Subtract 1 and 2-digit numbers to 20</b></p>	<p>When subtracting one-digit numbers that cross 10, it is important to highlight the importance of ten ones equalling one ten</p> <p>Children should be encouraged to find the number bond to 10 when partitioning the subtracted number.</p> <p>Tens frames, number shapes and number lines are particularly useful for this.</p>	<p>Part - whole models</p> <p>Bar Models</p> <p>Number shapes</p> <p>Tens frames (within 20)</p> <p>Bead strings (20)</p> <p>Number tracks</p> <p>Number lines (labelled)</p> <p>Straws</p>	<p><b>Skill: Subtract 1 and 2-digit numbers to 20</b></p> 

Year 1	Multiplication		
Skill	Representation and models		
<p><b>Solve one-step problems using multiplication</b></p>	<p>Children represent multiplication as repeated addition in many different ways.</p> <p>In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to represent multiplication formally.</p>	<p>Bar models</p> <p>Number shapes</p> <p>Counters</p> <p>Tens Frames</p> <p>Bead Strings</p> <p>Number lines</p>	<p><b>Skill: Solve 1-step problems using multiplication</b></p>  <p>One bag holds 5 apples. How many apples do 4 bags hold?</p> <p><math>5 + 5 + 5 + 5 = 20</math>  <math>4 \times 5 = 20</math>  <math>5 \times 4 = 20</math></p>
Year 1	Division		
Skill	Representation and models		
<p><b>Solve one-step problems with division (sharing)</b></p>	<p>Children solve problems by sharing amounts into equal groups.</p> <p>Children use concrete and pictorial representations to solve problems. They are not expected to record division formally</p>	<p>Bar models</p> <p>Real-life objects</p> <p>Arrays</p> <p>Counters</p>	<p><b>Skill: Solve 1-step problems using multiplication (sharing)</b></p>  <p>There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?</p> <p><math>20 \div 5 = 4</math></p>

**Solve one-step problems with division (grouping)**

Children solve problems by grouping and counting the number of groups . Grouping encourages the children to count in multiples and links to repeated subtraction on a number line.

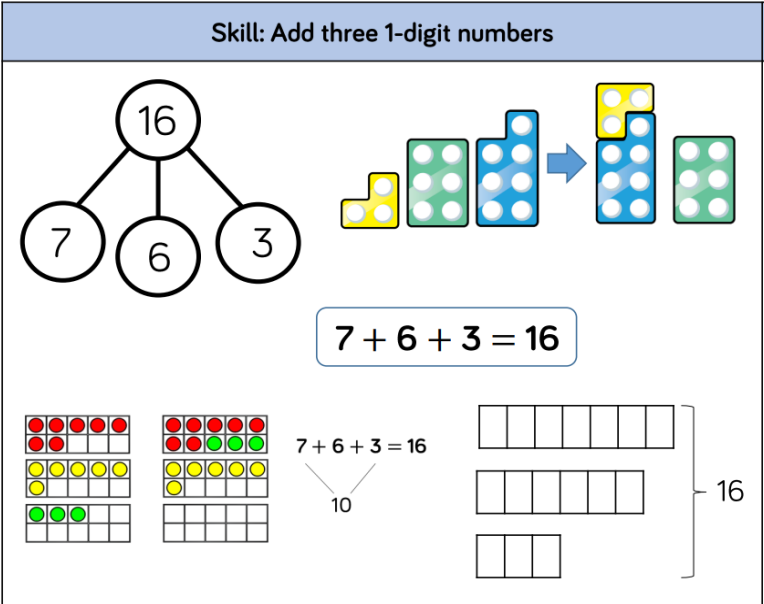
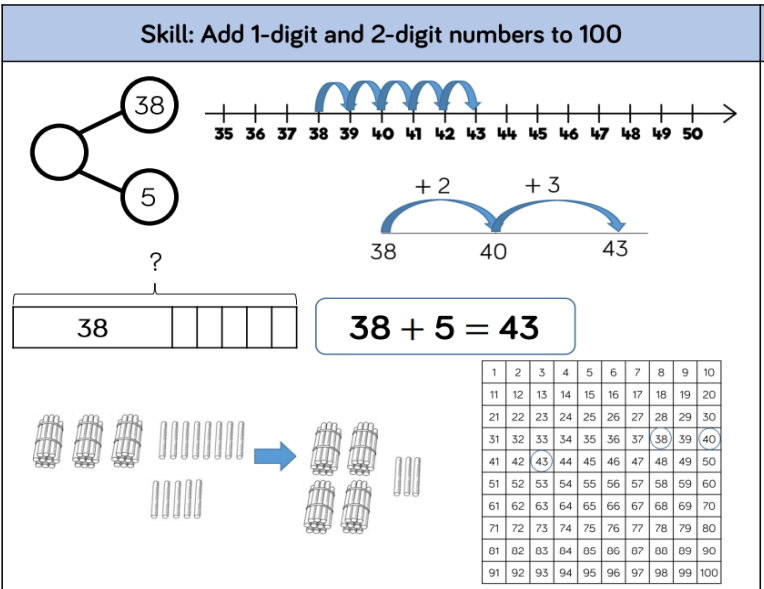
They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division

- Real-life objects
- Number shapes
- Bead strings
- Ten Frames
- Number lines
- Arrays
- Counters

**Skill: Solve 1-step problems using division (grouping)**

There are 20 apples altogether.  
They are put in bags of 5.  
How many bags are there?

$$20 \div 5 = 4$$

Year 2	Addition		
Skill	Representation and models		
<p><b>Add three 1-digit numbers.</b></p>	<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>Part-whole model</p> <p>Bar model</p> <p>Tens frame (within 20)</p> <p>Number shapes</p>	<p>Skill: Add three 1-digit numbers</p> 
<p><b>Add 1 and 2-digit numbers to 100</b></p>	<p>When adding single digits to a 2-digit number, children should be encouraged to count on from the larger number. They should also apply their knowledge of number bonds to add more efficiently. Hundred squares and straws can support children to find the number bond to 10.</p>	<p>Part - whole model</p> <p>Bar model</p> <p>Number lines (labelled)</p> <p>Number lines (blank)</p> <p>Straws</p> <p>Hundred squares</p>	<p>Skill: Add 1-digit and 2-digit numbers to 100</p> 

<p><b>Add two 2-digit numbers.</b></p>	<p>At this stage, 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> <p>Children can also use a blank number line to count on to find the total.</p> <p>Encourage them to jump to multiples of 10 to become more efficient.</p>	<p>Part - whole model</p> <p>Bar model</p> <p>Base 10</p> <p>Number lines (blank)</p> <p>Straws</p> <p>Place value counters</p> <p>Column addition</p>	<p style="text-align: center;"><b>Skill: Add two 2-digit numbers to 100</b></p>
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<b>Year 2</b>	<b>Subtraction</b>
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<b>Skill</b>	<b>Representation and models</b>
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<p><b>Subtract 1 and 2-digit numbers to 100</b></p>	<p>At this stage, 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Number lines (blank)</p> <p>Number lines (labelled)</p> <p>Straws</p> <p>Hundred Square</p> <p>Column subtraction</p>	<p style="text-align: center;"><b>Skill: Subtract 1 and 2-digit numbers to 100</b></p>
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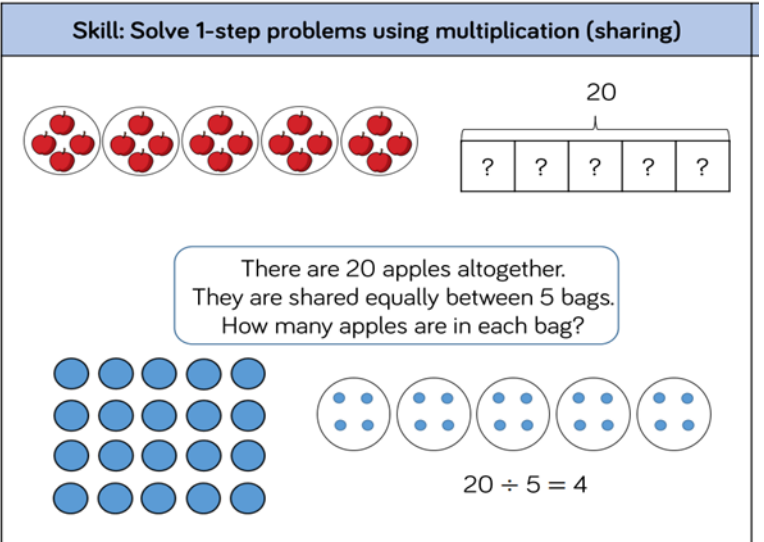
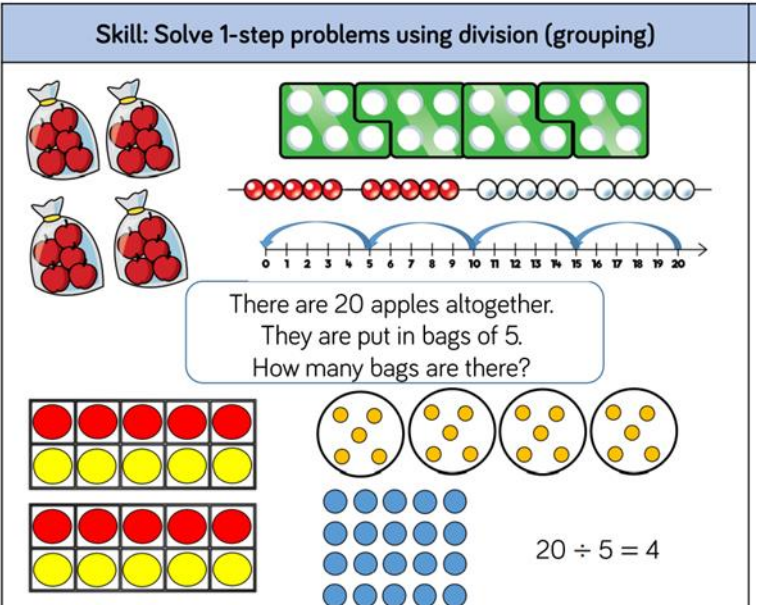
<p><b>Subtract two 2-digit numbers.</b></p>		<p>Part - whole model</p> <p>Bar model</p> <p>Number lines (blank)</p> <p>Straws</p> <p>Base 10</p> <p>Place value counters</p> <p>Column subtraction</p>	<p><b>Skill: Subtract 1 and 2-digit numbers to 100</b></p>
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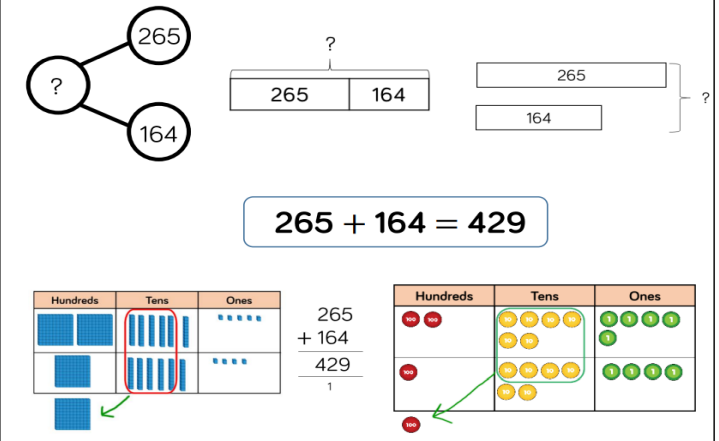
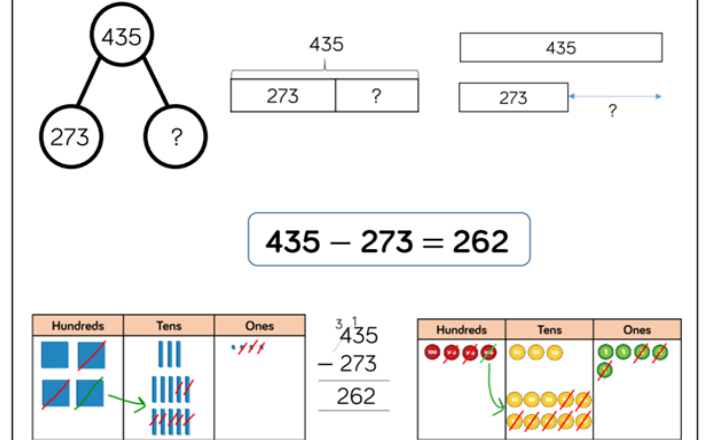
**Year 2 Multiplication**

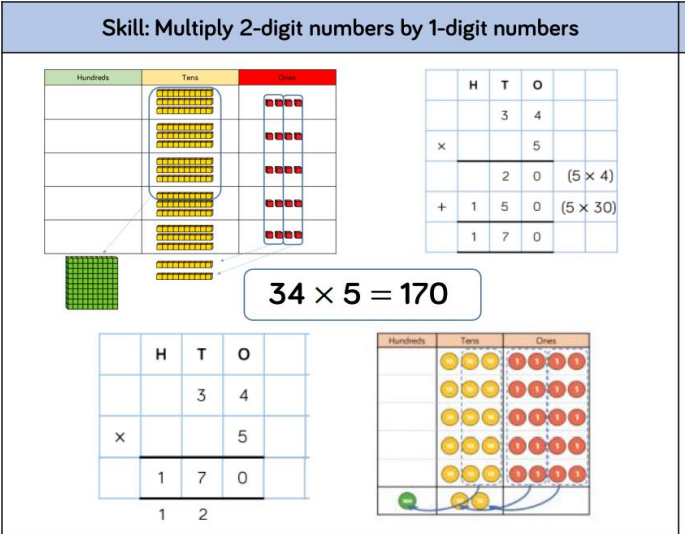
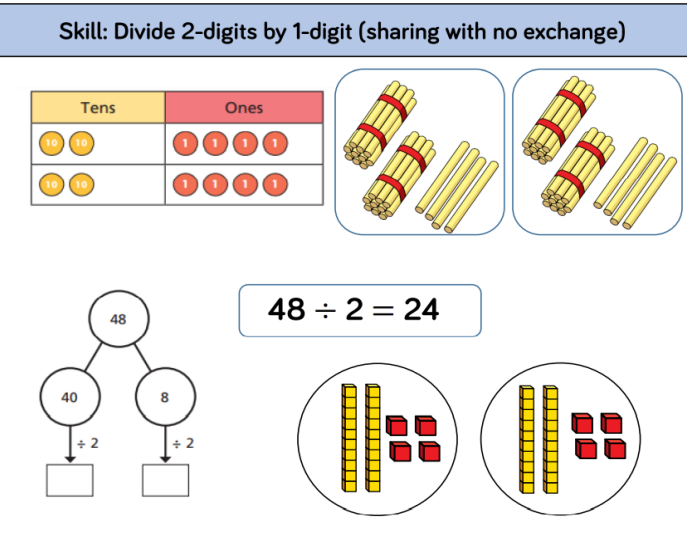
**Skill Representation and models**

<p><b>Solve one-step problems using multiplication</b></p>	<p>Children represent multiplication as repeated addition in many different ways.</p> <p>In Year 2 children are introduced to the multiplication symbol.</p>	<p>Bar models</p> <p>Number shapes</p> <p>Counters</p> <p>Tens Frames</p> <p>Bead Strings</p> <p>Number lines</p>	<p><b>Skill: Solve 1-step problems using multiplication</b></p>
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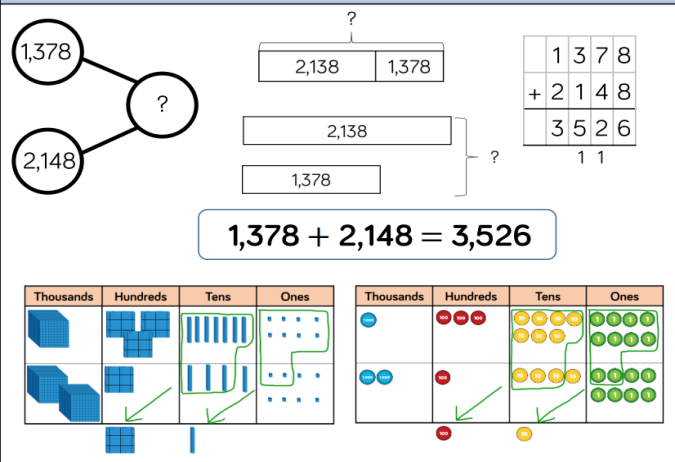
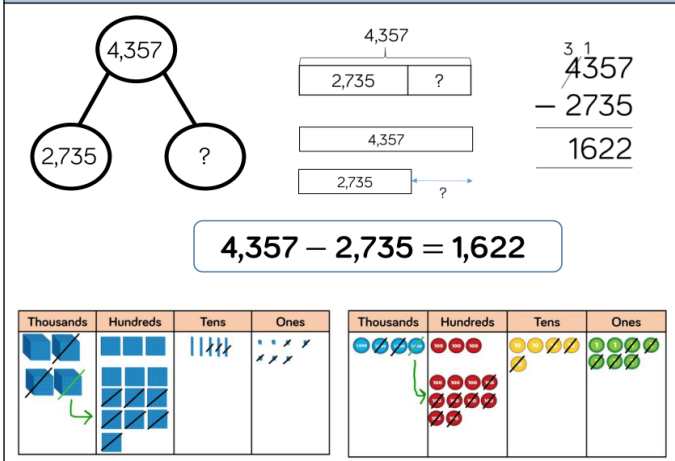


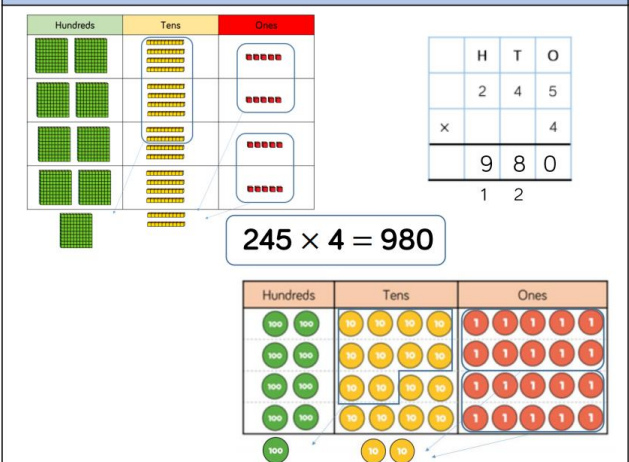
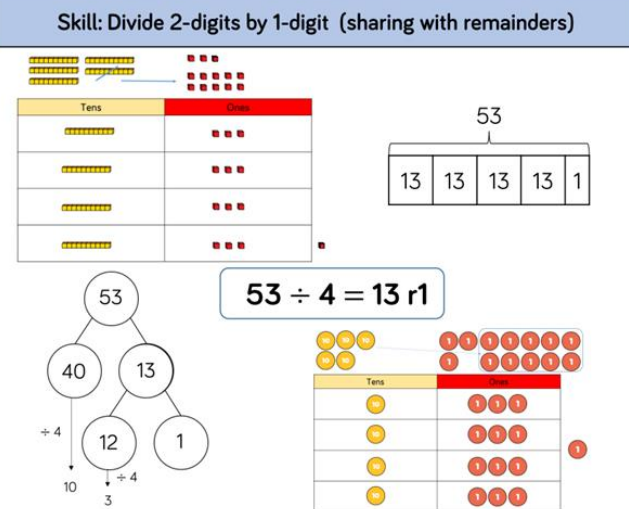
Year 2	Division		
Skill	Representation and models		
<p><b>Solve one-step problems with division (sharing)</b></p>	<p>Children solve problems by sharing amounts into equal groups.</p> <p>Children are introduced to the division symbol</p>	<p>Bar models</p> <p>Real-life objects</p> <p>Arrays</p> <p>Counters</p>	<p><b>Skill: Solve 1-step problems using multiplication (sharing)</b></p>  <p>There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?</p> $20 \div 5 = 4$
<p><b>Solve one-step problems with division (grouping)</b></p>	<p>Children solve problems by grouping and counting the number of groups. Grouping encourages the children to count in multiples and links to repeated subtraction on a number line.</p> <p>They can use concrete representations in fixed groups such as number shapes which helps to show the link between multiplication and division</p>	<p>Real-life objects</p> <p>Number shapes</p> <p>Bead strings</p> <p>Ten Frames</p> <p>Number lines</p> <p>Arrays</p> <p>Counters</p>	<p><b>Skill: Solve 1-step problems using division (grouping)</b></p>  <p>There are 20 apples altogether. They are put in bags of 5. How many bags are there?</p> $20 \div 5 = 4$

Year 3	Addition		
Skill	Representation and models		
<p><b>Add numbers with up to 3 digits.</b></p>	<p>Base 10 and place value counters are the most effective manipulative when adding numbers with up to 3 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Base 10</p> <p>Place value counters</p> <p>Column addition</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e1eef6; margin: -5px -5px 5px -5px;">Skill: Add numbers with up to 3 digits</p>  <p style="text-align: center; border: 1px solid black; border-radius: 10px; padding: 5px; margin: 10px 0;"><b>265 + 164 = 429</b></p> </div>
Year 3	Subtraction		
Skill	Representation and models		
<p><b>Subtract with up to 3 digits.</b></p>	<p>Base 10 and place value counters are the most effective manipulative when subtracting numbers with up to 3 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Base 10</p> <p>Place value counters</p> <p>Column subtraction</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e1eef6; margin: -5px -5px 5px -5px;">Skill: Subtract numbers with up to 3 digits</p>  <p style="text-align: center; border: 1px solid black; border-radius: 10px; padding: 5px; margin: 10px 0;"><b>435 - 273 = 262</b></p> </div>

Year 3	Multiplication		
Skill	Representation and models		
<p><b>Multiply 2-digit by 1-digit numbers</b></p>	<p>Teachers may first choose to look at the expanded column method, before moving on to the short multiplication method.</p> <p>The place value counters should be used to support the understanding of the method rather than supporting the multiplication, as children should use their times tables knowledge</p>	<p>Place value counters</p> <p>Base 10</p> <p>Short written method</p> <p>Expanded written method</p>	<p>Skill: Multiply 2-digit numbers by 1-digit numbers</p> 
Year 3	Division		
Skill	Representation and models		
<p><b>Divide 2-digits by 1-digit (no exchanging)</b></p>	<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>	<p>Straws</p> <p>Base 10</p> <p>Bar model</p> <p>Place value counters</p> <p>Part-whole model</p>	<p>Skill: Divide 2-digits by 1-digit (sharing with no exchange)</p> 

<p><b>Divide 2-digits by 1-digit (sharing with exchange)</b></p>	<p>When dividing numbers involving an exchange, children can use Base 10 and place value counters to exchange one ten for tens and ones. Children should start with the equipment outside the place value grid before sharing the tens and ones equally between the rows.</p>	<p>Straws Base 10 Bar model Place value counters Part-whole model</p>	<p><b>Skill: Divide 2-digits by 1-digit (sharing with exchange)</b></p> <p><math>52 \div 4 = 13</math></p>
<p><b>Divide 2-digits by 1-digit (sharing with remainders)</b></p>	<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>	<p>Straws Base 10 Bar model Place value counters Part-whole model</p>	<p><b>Skill: Divide 2-digits by 1-digit (sharing with remainders)</b></p> <p><math>53 \div 4 = 13 \text{ r}1</math></p>

<b>Year 4</b>	<b>Addition</b>		
<b>Skill</b>	<b>Representation and models</b>		
<p><b>Add numbers with up to 4 digits.</b></p>	<p>Base 10 and place value counters are the most effective manipulatives when adding 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Base 10</p> <p>Place value counters</p> <p>Column addition</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e1eef6; margin: -5px -5px 5px -5px;"><b>Skill: Add numbers with up to 4 digits</b></p>  <p style="text-align: center; margin-top: 10px;"><b>1,378 + 2,148 = 3,526</b></p> </div>
<b>Year 4</b>	<b>Subtraction</b>		
<b>Skill</b>	<b>Representation and models</b>		
<p><b>Subtract numbers with up to 4 digits.</b></p>	<p>Base 10 and place value counters are the most effective manipulatives when adding 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Base 10</p> <p>Place value counters</p> <p>Column addition</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e1eef6; margin: -5px -5px 5px -5px;"><b>Skill: Subtract numbers with up to 4 digits</b></p>  <p style="text-align: center; margin-top: 10px;"><b>4,357 - 2,735 = 1,622</b></p> </div>

<b>Year 4</b>	<b>Multiplication</b>		
<b>Skill</b>	<b>Representation and models</b>		
<p><b>Multiply a 3-digit by a 1-digit number</b></p>	<p>When moving to 3 digit by 1 digit multiplication, encourage children to move towards the short, formal written method.</p> <p>Base 10 and place value counters continue to support the understanding of the written method.</p> <p>Limit the number of exchanges needed in the questions and move children away from resources when multiplying larger numbers.</p>	<p>Place value counters</p> <p>Base 10</p> <p>Short written method</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e0e0e0; margin: 0;"><b>Skill: Multiply 3-digit numbers by 1-digit numbers</b></p>  </div>
<b>Year 4</b>	<b>Division</b>		
<b>Skill</b>	<b>Representation and models</b>		
<p><b>Divide 2 digits by 1 digit (sharing with remainders)</b></p>	<p>When dividing numbers with remainders, children can use Base 10 and place value counters to exchange one ten for ten ones.</p> <p>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.</p> <p>Flexible partitioning in a part-whole model supports this method</p>	<p>Straws</p> <p>Base 10</p> <p>Bar model</p> <p>Place value counters</p> <p>Part-whole model</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e0e0e0; margin: 0;"><b>Skill: Divide 2-digits by 1-digit (sharing with remainders)</b></p>  </div>

**Divide 2 digits by 1 digit grouping**

When using the short division method, children use grouping. Starting with the largest place value, they group by divisor. Language is important here. Eg: Children should consider 'How many groups of 4 tens can we make? And How many groups of 4 ones can we make?'  
Remainders can also be seen as they are left ungrouped

Place value counters  
Counters  
Place value grid  
Written short division

Skill: Divide 2-digits by 1-digit (grouping)

52 ÷ 4 = 13

**Divide 3 digits by 1 digit (sharing with exchange)**

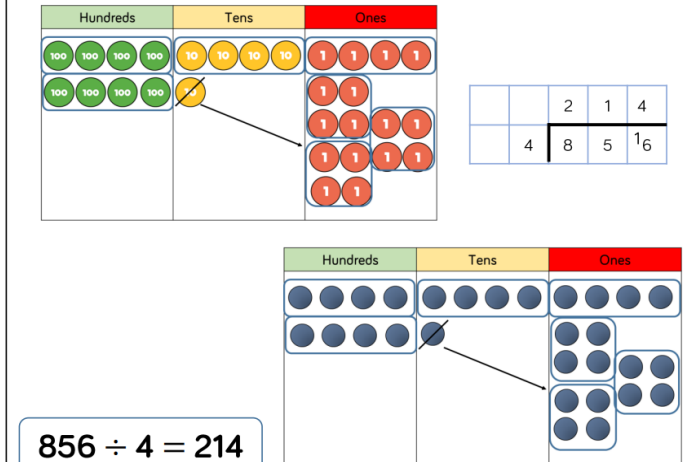
Children can continue to use place value counters to share 3-digit numbers into equal groups. Children should start with the equipment outside the place value grid before sharing the hundreds, tens and ones equally between the rows  
This method can also help highlight the remainders.  
Flexible partitioning in a part-whole model supports this method

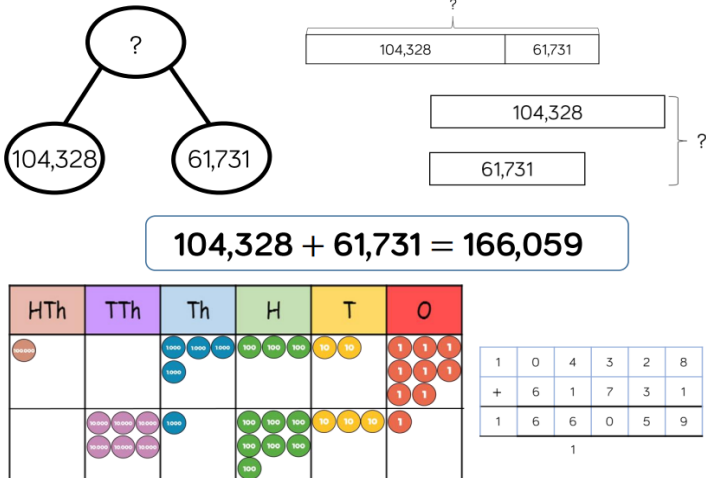
Base 10  
Bar Model  
Place value counters  
Part-whole model

Skill: Divide 3-digits by 1-digit (sharing)

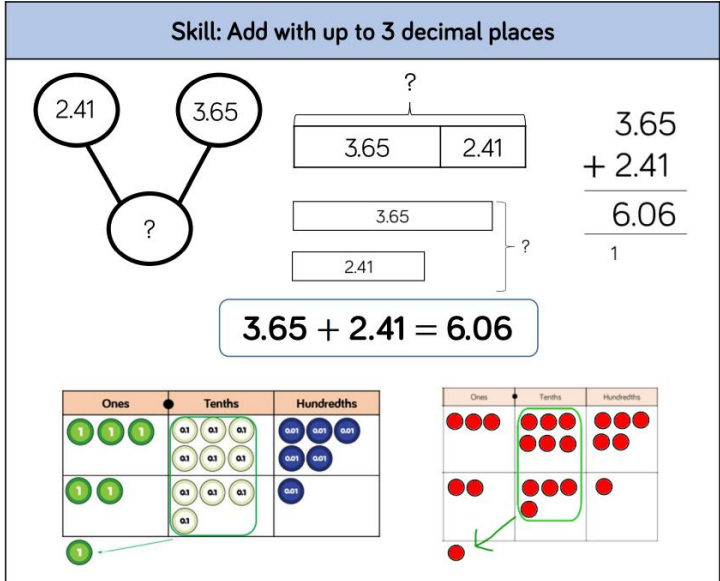
844 ÷ 4 = 211

844 ÷ 4 = 211

<p><b>Divide 3 digits by 1 digit (grouping)</b></p>	<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. 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>	<p>Place value counters</p> <p>Counters</p> <p>Place Value grid</p> <p>Written short division</p>	<p style="text-align: center;"><b>Skill: Divide 3-digits by 1-digit (grouping)</b></p>  <p style="text-align: center;"><math>856 \div 4 = 214</math></p>
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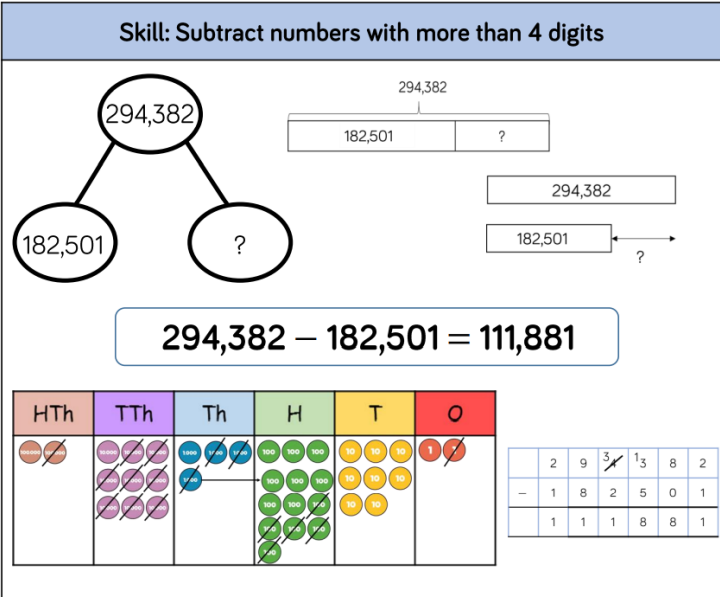
<p><b>Year 5</b></p>	<p><b>Addition</b></p>		
<p><b>Skill</b></p>	<p><b>Representation and models</b></p>		
<p><b>Add with more than 4 digits</b></p>	<p>Place value counters or plain counters on a place value grid are the most effective concrete resources when adding numbers with more than 4 digits.</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>Part - whole model</p> <p>Bar Model</p> <p>Place value counters</p> <p>Column addition</p>	<p style="text-align: center;"><b>Skill: Add numbers with more than 4 digits</b></p>  <p style="text-align: center;"><math>104,328 + 61,731 = 166,059</math></p>



<p><b>Add with up to 3 decimal places</b></p>	<p>Place value counters and plain counters on a place value grid are the most effective manipulative when adding decimals with 1,2 and then 3 decimal places. 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>Part - whole model Bar Model Place value counters Column addition</p>	<p style="text-align: center;"><b>Skill: Add with up to 3 decimal places</b></p>  <p>The diagram illustrates the addition of 2.41 and 3.65. It includes a part-whole model where 2.41 and 3.65 are combined to find a total of 6.06. A bar model shows 3.65 and 2.41 being added together. Column addition shows the numbers aligned by decimal point, resulting in 6.06 with a carry of 1. Place value grids show the physical representation of the numbers and the carrying process.</p> <p style="text-align: center;"><b>3.65 + 2.41 = 6.06</b></p>
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<p><b>Year 5</b></p>	<p><b>Subtraction</b></p>		
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<p><b>Skill</b></p>	<p><b>Representation and models</b></p>		
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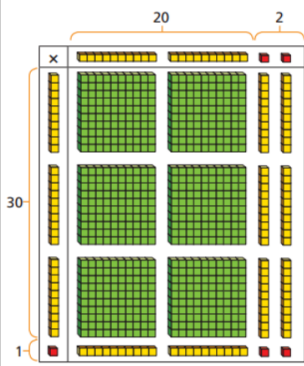
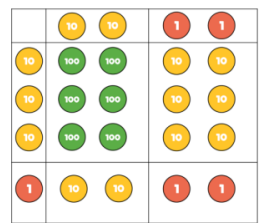
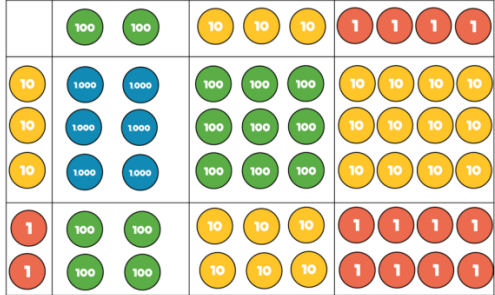
<p><b>Subtract with more than 4 digits</b></p>	<p>Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting numbers with more than 4 digits. At this stage, children should be encouraged to work in the abstract, using the column method to subtract larger numbers efficiently</p>	<p>Part - whole model Bar model Place value counters Column subtraction</p>	<p style="text-align: center;"><b>Skill: Subtract numbers with more than 4 digits</b></p>  <p>The diagram illustrates the subtraction of 182,501 from 294,382. It includes a part-whole model where 294,382 is split into 182,501 and 111,881. A bar model shows 294,382 minus 182,501. Place value grids show the physical representation of the numbers and the borrowing process. Column subtraction shows the numbers aligned by place value, resulting in 111,881.</p> <p style="text-align: center;"><b>294,382 - 182,501 = 111,881</b></p>
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<p><b>Subtract with up to 3 decimal places</b></p>	<p>Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Place value counters</p> <p>Column subtraction</p>	<p style="text-align: center;"><b>Skill: Subtract with up to 3 decimal places</b></p> <p style="text-align: center;"><math>5.43 - 2.7 = 2.73</math></p>
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<p><b>Year 5</b></p>	<p><b>Multiplication</b></p>
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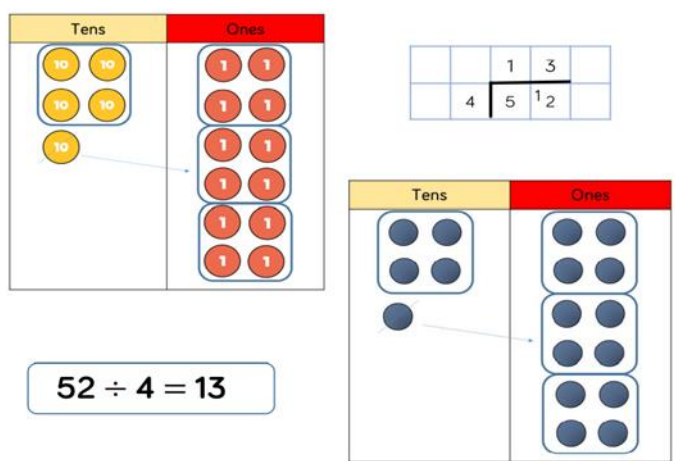
<p><b>Skill</b></p>	<p><b>Representation and models</b></p>
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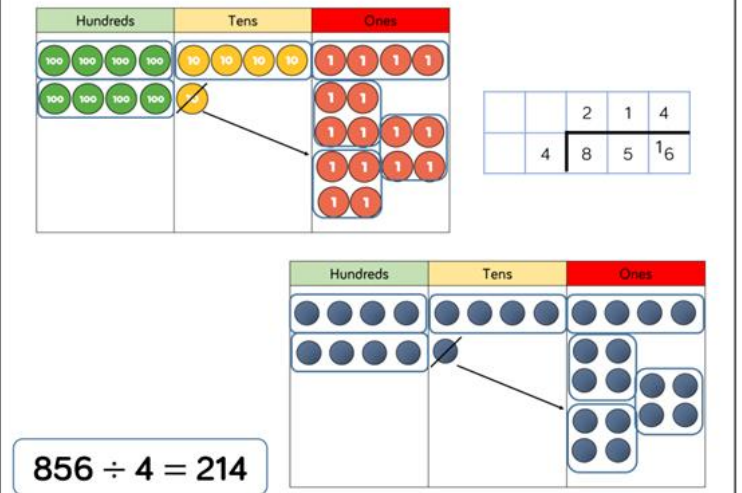
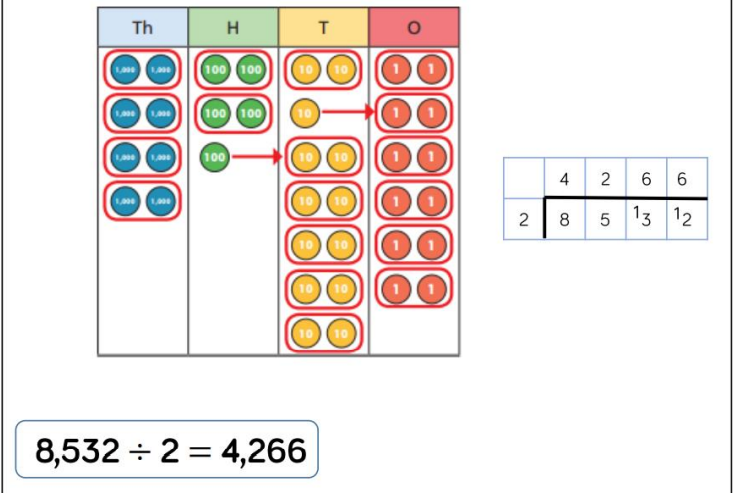
<p><b>Multiply 4 by 1 -digit numbers</b></p>	<p>When multiplying 4-digit numbers, place value counters are the best manipulative to support children in their understanding of the formal written method.</p> <p>If children are multiplying larger numbers and struggling with their times tables, encourage the use of multiplication grids so children can focus on the use of the method</p>	<p>Place value counters</p> <p>Short written method</p>	<p style="text-align: center;"><b>Skill: Multiply 4-digit numbers by 1-digit numbers</b></p> <p style="text-align: center;"><math>1,826 \times 3 = 5,478</math></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <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> <tr><td></td><td></td><td>2</td><td>1</td><td></td></tr> </table>		Th	H	T	O		1	8	2	6	x				3		5	4	7	8			2	1	
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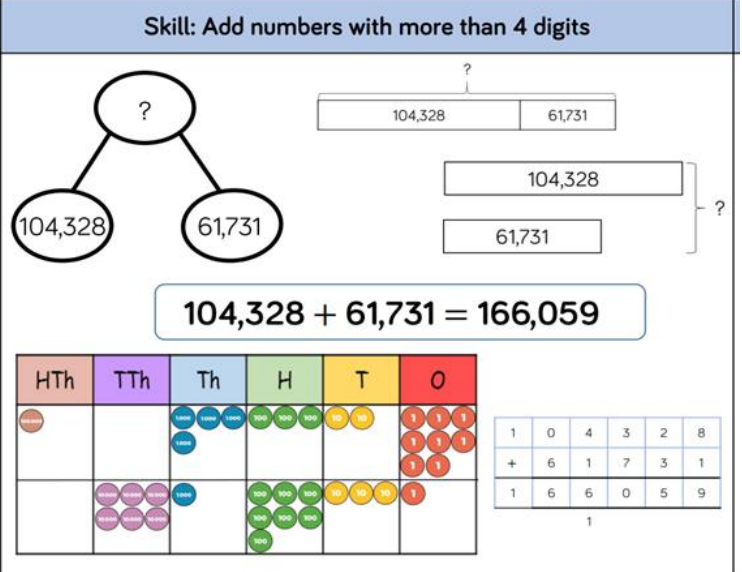
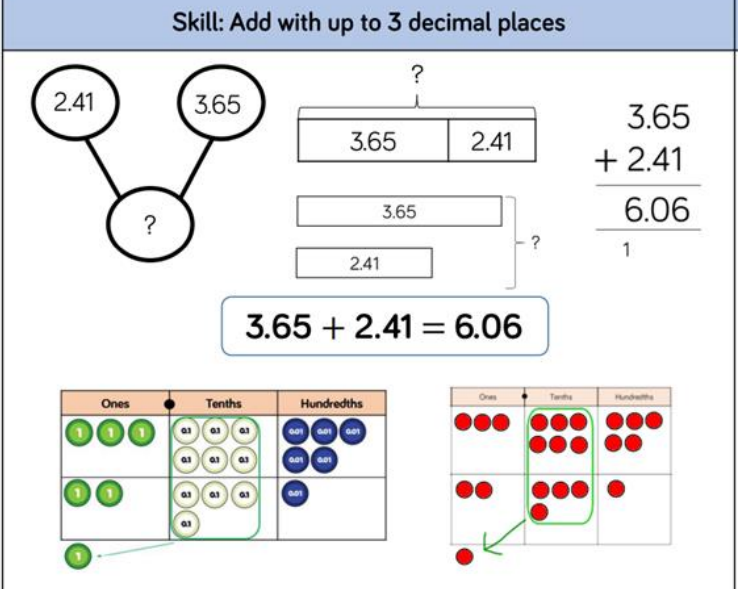
<p><b>Multiply 2 by 2-digit numbers</b></p>	<p>When multiplying a multi-digit number by 2 digits, use the area model to help children fully understand the size of the numbers they are using. This links to finding the area of a rectangle by finding the space covered by the base 10. The grid method matches the area model as an initial written method before moving on to the formal written multiplication method.</p>	<p>Place value counters</p> <p>Base 10</p> <p>Short written method</p> <p>Grid method</p>	<p style="text-align: center;"><b>Skill: Multiply 2-digit numbers by 2-digit numbers</b></p>   <table border="1" data-bbox="1724 454 1915 582"> <tr><td>×</td><td>20</td><td>2</td></tr> <tr><td>30</td><td>600</td><td>60</td></tr> <tr><td>1</td><td>20</td><td>2</td></tr> </table> <table border="1" data-bbox="1926 422 2094 670"> <thead><tr><th></th><th>H</th><th>T</th><th>O</th></tr></thead> <tbody> <tr><td></td><td></td><td>2</td><td>2</td></tr> <tr><td>×</td><td></td><td>3</td><td>1</td></tr> <tr><td></td><td></td><td>2</td><td>2</td></tr> <tr><td></td><td>6</td><td>6</td><td>0</td></tr> <tr><td></td><td>6</td><td>8</td><td>2</td></tr> </tbody> </table> <p style="text-align: center;"><b>22 × 31 = 682</b></p>	×	20	2	30	600	60	1	20	2		H	T	O			2	2	×		3	1			2	2		6	6	0		6	8	2									
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<p><b>Multiply 2 by 3-digit numbers</b></p>	<p>Children can continue to use the area model when multiplying 3 digits by 2 digits. Place value counters become more efficient to use but Base 10 can be used to highlight the size of the numbers. Encourage children to move towards the formal written method, seeing the links with the grid method.</p>	<p>Place value counters</p> <p>Short written method</p> <p>Grid method</p>	<p style="text-align: center;"><b>Skill: Multiply 3-digit numbers by 2-digit numbers</b></p>  <table border="1" data-bbox="1926 853 2105 1109"> <thead><tr><th></th><th>Th</th><th>H</th><th>T</th><th>O</th></tr></thead> <tbody> <tr><td></td><td></td><td>2</td><td>3</td><td>4</td></tr> <tr><td>×</td><td></td><td>3</td><td>2</td><td></td></tr> <tr><td></td><td></td><td>4</td><td>6</td><td>8</td></tr> <tr><td>17</td><td>1</td><td>0</td><td>2</td><td>0</td></tr> <tr><td>7</td><td>4</td><td>8</td><td>8</td><td></td></tr> </tbody> </table> <table border="1" data-bbox="1758 1181 2116 1316"> <tr><td>×</td><td>200</td><td>30</td><td>4</td></tr> <tr><td>30</td><td>6,000</td><td>900</td><td>120</td></tr> <tr><td>2</td><td>400</td><td>60</td><td>8</td></tr> </table> <p style="text-align: center;"><b>234 × 32 = 7,488</b></p>		Th	H	T	O			2	3	4	×		3	2				4	6	8	17	1	0	2	0	7	4	8	8		×	200	30	4	30	6,000	900	120	2	400	60	8
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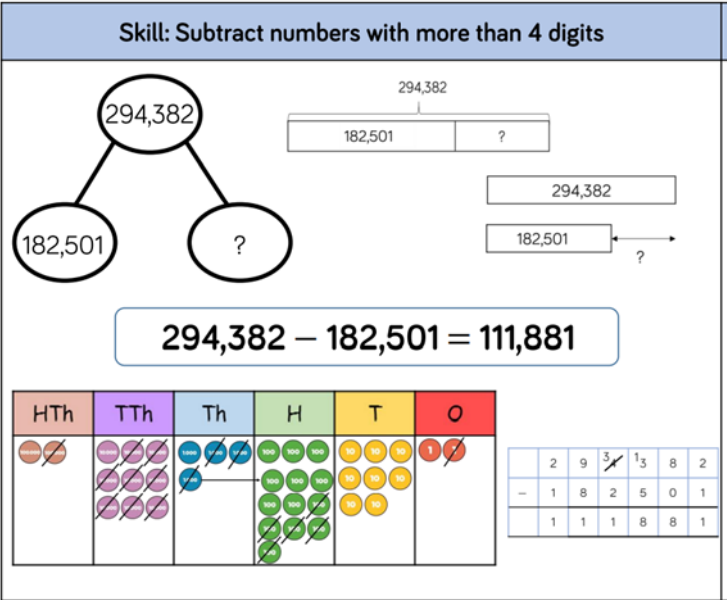
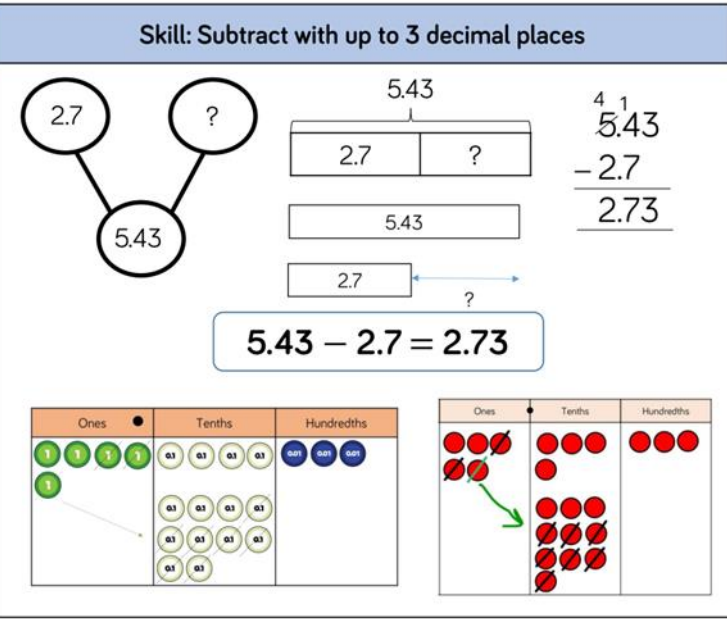
<p><b>Multiply 2 by 4-digit numbers</b></p>	<p>When multiplying 4-digits by 2-digits, children should be confident with the written method. If they are still struggling with times tables, provide multiplication grids to support when they are focussing on the use of the method Consider where exchanged digits are placed and make sure this is consistent</p>	<p>Formal written method</p>	<p style="text-align: center;">Skill: Multiply 4-digit numbers by 2-digit numbers</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><td>TTh</td><td>Th</td><td>H</td><td>T</td><td>O</td></tr> <tr><td></td><td>2</td><td>7</td><td>3</td><td>9</td></tr> <tr><td>×</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> </table> <p style="text-align: center;">1</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <math>2,739 \times 28 = 76,692</math> </div>	TTh	Th	H	T	O		2	7	3	9	×			2	8	2	1	9	1	2	2	5	3	7		5	4	7	8	0	1		1			7	6	6	9	2
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<b>Year 5</b>	<b>Division</b>
<b>Skill</b>	<b>Representation and models</b>

<p><b>Divide 2 digits by 1 digit grouping</b></p>	<p>When using the short division method, children use grouping. Starting with the largest place value, they group by divisor. Language is important here. Eg: Children should consider 'How many groups of 4 tens can we make? And How many groups of 4 ones can we make?' Remainders can also be seen as they are left ungrouped</p>	<p>Place value counters Counters Place value grid Written short division</p>	<p style="text-align: center;">Skill: Divide 2-digits by 1-digit (grouping)</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <math>52 \div 4 = 13</math> </div>
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<p><b>Divide 3 digits by 1 digit (grouping)</b></p>	<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. 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>	<p>Place value counters</p> <p>Counters</p> <p>Place Value grid</p> <p>Written short division</p>	<p style="text-align: center;"><b>Skill: Divide 3-digits by 1-digit (grouping)</b></p>  <p style="text-align: center;"><math>856 \div 4 = 214</math></p>
<p><b>Divide 4 digits by 1 digit (grouping)</b></p>	<p>Place value counters or plain counters can be used on a place value grid to support children to divide 4-digits by 1-digit</p> <p>Children can also draw their own counters and group them through a more pictorial method.</p> <p>Children should be encouraged to move away from the concrete and pictorial when dividing numbers with multiple exchanges</p>	<p>Place value counters</p> <p>Counters</p> <p>Place Value grid</p> <p>Written short division</p>	<p style="text-align: center;"><b>Skill: Divide 4-digits by 1-digit (grouping)</b></p>  <p style="text-align: center;"><math>8,532 \div 2 = 4,266</math></p>

Year 6	Addition		
Skill	Representation and models		
<p><b>To add with more than 4 digits</b></p>	<p>Place value counters or plain counters on a place value grid are the most effective concrete resources 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>Part - whole model</p> <p>Bar Model</p> <p>Place value counters</p> <p>Column addition</p>	<p><b>Skill: Add numbers with more than 4 digits</b></p> 
<p><b>Add with up to 3 decimal places</b></p>	<p>Place value counters and plain counters on a place value grid are the most effective manipulative 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>Part - whole model</p> <p>Bar Model</p> <p>Place value counters</p> <p>Column addition</p>	<p><b>Skill: Add with up to 3 decimal places</b></p> 

Year 6	Subtraction		
Skill	Representation and models		
<p><b>Subtract with more than 4 digits</b></p>	<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. At this stage, children should be encouraged to work in the abstract, using the column method to subtract larger numbers efficiently.</p>	<p>Part - whole model</p> <p>Bar model</p> <p>Place value counters</p> <p>Column subtraction</p>	<p><b>Skill: Subtract numbers with more than 4 digits</b></p>  <p><math>294,382 - 182,501 = 111,881</math></p>
<p><b>Subtract with up to 3 decimal places</b></p>	<p>Place value counters or plain counters on a place value grid are the most effective concrete resource when subtracting with 1,2 and then 3 decimal places. 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>	<p>Part - whole model</p> <p>Bar model</p> <p>Place value counters</p> <p>Column subtraction</p>	<p><b>Skill: Subtract with up to 3 decimal places</b></p>  <p><math>5.43 - 2.7 = 2.73</math></p>

<b>Year 6</b>	<b>Multiplication</b>		
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<b>Skill</b>	<b>Representation and models</b>		
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<b>Multiply 2 by 4-digit numbers</b>	<p>When multiplying 4-digits by 2-digits, children should be confident with the written method.</p> <p>If they are still struggling with times tables, provide multiplication grids to support when they are focussing on the use of the method.</p> <p>Consider where exchanged digits are placed and make sure this is consistent</p>	<p>Formal written method</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e0e0e0; margin: 0;">Skill: Multiply 4-digit numbers by 2-digit numbers</p> <table style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">TTh</th> <th style="padding: 5px;">Th</th> <th style="padding: 5px;">H</th> <th style="padding: 5px;">T</th> <th style="padding: 5px;">O</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">7</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">9</td> </tr> <tr> <td style="padding: 5px; text-align: center;">×</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">8</td> </tr> <tr> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px; text-align: center;">9</td> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px; text-align: center;">2</td> </tr> <tr> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">5</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">7</td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px; text-align: center;">5</td> <td style="padding: 5px; text-align: center;">4</td> <td style="padding: 5px; text-align: center;">7</td> <td style="padding: 5px; text-align: center;">8</td> <td style="padding: 5px; text-align: center;">0</td> </tr> <tr> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> </tr> <tr> <td style="padding: 5px; text-align: center;">7</td> <td style="padding: 5px; text-align: center;">6</td> <td style="padding: 5px; text-align: center;">6</td> <td style="padding: 5px; text-align: center;">9</td> <td style="padding: 5px; text-align: center;">2</td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 10px;"><math>2,739 \times 28 = 76,692</math></p> </div>	TTh	Th	H	T	O		2	7	3	9	×			2	8	2	1	9	1	2	2	5	3	7		5	4	7	8	0	1		1			7	6	6	9	2
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<b>Year 6</b>	<b>Division</b>		
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<b>Skill</b>	<b>Representation and models</b>		
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<b>Divide multi - digits by 2-digits (short division)</b>	<p>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</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>	<p>Written short division.</p> <p>List of multiples</p>	<div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #e0e0e0; margin: 0;">Skill: Divide multi digits by 2-digits (short division)</p> <table style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">0</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">6</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">12</td> <td style="padding: 5px; text-align: center;">4</td> <td style="padding: 5px; text-align: center;">4</td> <td style="padding: 5px; text-align: center;">7</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">2</td> </tr> </table> <p style="text-align: center; margin-top: 10px;"><math>432 \div 12 = 36</math></p> <table style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">0</td> <td style="padding: 5px; text-align: center;">4</td> <td style="padding: 5px; text-align: center;">8</td> <td style="padding: 5px; text-align: center;">9</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">15</td> <td style="padding: 5px; text-align: center;">7</td> <td style="padding: 5px; text-align: center;">7</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">13</td> </tr> <tr> <td style="padding: 5px;"></td> <td style="padding: 5px;"></td> <td style="padding: 5px; text-align: center;">5</td> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">5</td> <td style="padding: 5px; text-align: center;">5</td> </tr> </table> <p style="text-align: center; margin-top: 10px;"><math>7,335 \div 15 = 489</math></p> <table style="margin: 10px auto; border-collapse: collapse; width: 100%;"> <tr> <td style="padding: 5px; text-align: center;">15</td> <td style="padding: 5px; text-align: center;">30</td> <td style="padding: 5px; text-align: center;">45</td> <td style="padding: 5px; text-align: center;">60</td> <td style="padding: 5px; text-align: center;">75</td> <td style="padding: 5px; text-align: center;">90</td> <td style="padding: 5px; text-align: center;">105</td> <td style="padding: 5px; text-align: center;">120</td> <td style="padding: 5px; text-align: center;">135</td> <td style="padding: 5px; text-align: center;">150</td> </tr> </table> </div>			0	3	6		12	4	4	7			3	3	2			0	4	8	9		15	7	7	3	13			5	3	5	5	15	30	45	60	75	90	105	120	135	150
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**Divide multi - digits by 2- digits (long division)**

Children can also divide by 2-digit numbers using long division.  
 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

Written long division.  
 List of multiples

**Skill: Divide multi-digits by 2-digits (long division)**

		0	3	6
1	2	4	3	2
	-	3	6	0
			7	2
	-		7	2
				0

- 12 × 1 = 12
- 12 × 2 = 24
- 12 × 3 = 36
- 12 × 4 = 48
- 12 × 5 = 60
- 12 × 6 = 72
- 12 × 7 = 84
- 12 × 8 = 96
- 12 × 9 = 108
- 12 × 10 = 120

**432 ÷ 12 = 36**

**7,335 ÷ 15 = 489**

		0	4	8	9
15	7	3	3	5	
	-	6	0	0	0
		1	3	3	5
	-	1	2	0	0
			1	3	5
	-		1	3	5
					0

- 1 × 15 = 15
- 2 × 15 = 30
- 3 × 15 = 45
- 4 × 15 = 60
- 5 × 15 = 75
- 10 × 15 = 150

# Glossary

**Addend** - A number to be added to another.

**Aggregation** - combining two or more quantities or measures to find a total.

**Augmentation** - increasing a quantity or measure by another quantity.

**Commutative** - numbers can be added in any order.

**Complement** - in addition, a number and its complement make a total e.g. 300 is the complement to 700 to make 1,000

**Difference** - the numerical difference between two numbers is found by comparing the quantity in each group.

**Exchange** - Change a number or expression for another of an equal value.

**Minuend** - A quantity or number from which another is subtracted.

**Partitioning** - Splitting a number into its component parts.

**Reduction** - Subtraction as take away.

**Subitise** - Instantly recognise the number of objects in a small group without needing to count.

**Subtrahend** - A number to be subtracted from another.

**Sum** - The result of an addition.

**Total** - The aggregate or the sum found by addition.

# Glossary

**Array** – An ordered collection of counters, cubes or other item in rows and columns.

**Commutative** – Numbers can be multiplied in any order.

**Dividend** – In division, the number that is divided.

**Divisor** – In division, the number by which another is divided.

**Exchange** – Change a number or expression for another of an equal value.

**Factor** – A number that multiplies with another to make a product.

**Multiplicand** – In multiplication, a number to be multiplied by another.

**Partitioning** – Splitting a number into its component parts.

**Product** – The result of multiplying one number by another.

**Quotient** – The result of a division

**Remainder** – The amount left over after a division when the divisor is not a factor of the dividend.

**Scaling** – Enlarging or reducing a number by a given amount, called the scale factor