

## Calculation Policy 2023-24

### Holy Trinity CE (A) Primary School

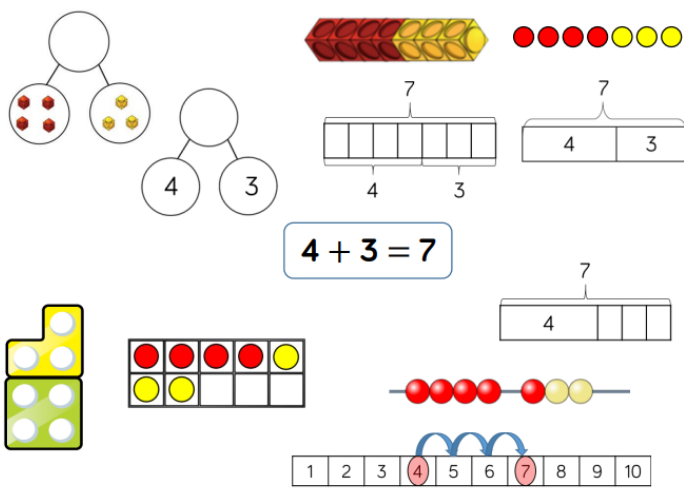
At Holy Trinity the aim of the calculation policy is to ensure continuity of methods and progression of procedural knowledge across the school. This ensures that the methods used are imbedded year on year and allows the children progress and develop more efficient methods as they move through the school.

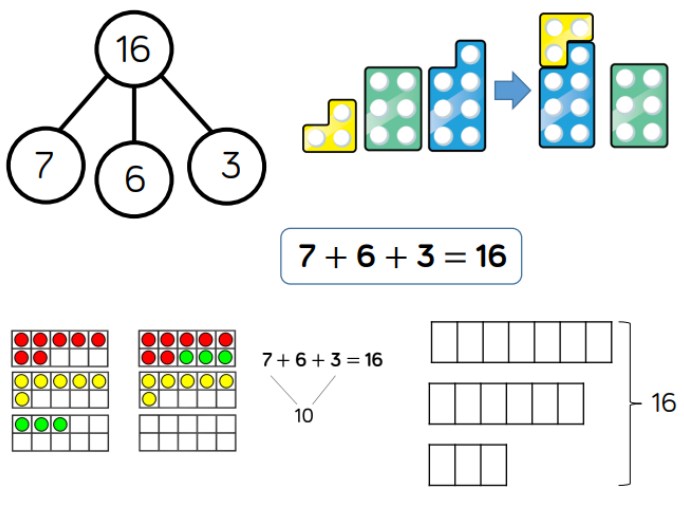
This policy has been taken and adapted from White Rose. We have found that the progression within the White Rose program has been beneficial to the teaching and learning at Holy Trinity to ensure that there are no gaps within the children's learning and supporting the teachers' confidence with the methods that they need to use.

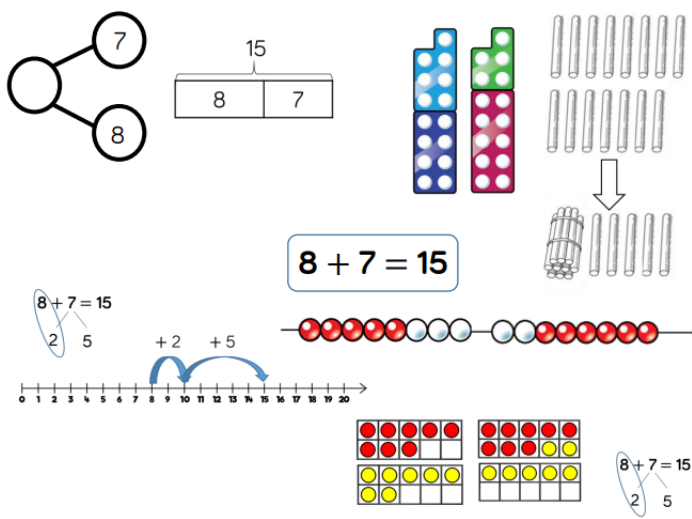
## Addition:

Skill	Year	Representations and models	
Add two 1-digit numbers to 10	1	Part-whole model Bar model Number shapes	Ten frames (within 10) Bead strings (10) Number tracks
Add 1 and 2-digit numbers to 20	1	Part-whole model Bar model Number shapes Ten frames (within 20)	Bead strings (20) Number tracks Number lines (labelled) Straws
Add three 1-digit numbers	2	Part-whole model Bar model	Ten frames (within 20) Number shapes
Add 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled)	Number lines (blank) Straws Hundred square

Skill	Year	Representations and models	
Add two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws	Base 10 Place value counters
Add with up to 3-digits	3	Part-whole model Bar model	Base 10 Place value counters Column addition
Add with up to 4-digits	4	Part-whole model Bar model	Base 10 Place value counters Column addition
Add with more than 4 digits	5	Part-whole model Bar model	Place value counters Column addition
Add with up to 3 decimal places	5	Part-whole model Bar model	Place value counters Column addition

Skill: Add 1-digit numbers within 10	Year: 1
 <p><math>4 + 3 = 7</math></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>

Skill: Add three 1-digit numbers	Year: 2
 <p><math>7 + 6 + 3 = 16</math></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>This supports children in their understanding of commutativity.</p> <p>Manipulatives that highlight number bonds to 10 are effective when adding three 1-digit numbers.</p>

Skill: Add 1 and 2-digit numbers to 20	Year: 1/2
 <p><math>8 + 7 = 15</math></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>



Skill: Add numbers with up to 4 digits	Year: 4																																																								
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>1,378</p> <p>2,148</p> <p>?</p> </div> <div style="text-align: center;"> <p>?</p> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="width: 50px; height: 20px;">2,138</td><td style="width: 50px; height: 20px;">1,378</td></tr> <tr><td colspan="2" style="border: none;">}</td></tr> <tr><td colspan="2" style="border: none;">?</td></tr> </table> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="width: 50px; height: 20px;">2,138</td></tr> <tr><td colspan="2" style="border: none;">}</td></tr> <tr><td colspan="2" style="border: none;">?</td></tr> </table> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="width: 50px; height: 20px;">1,378</td></tr> <tr><td colspan="2" style="border: none;">}</td></tr> <tr><td colspan="2" style="border: none;">?</td></tr> </table> </div> <div style="text-align: center;"> <table border="1" style="border-collapse: collapse;"> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">3</td><td style="width: 20px; height: 20px;">7</td><td style="width: 20px; height: 20px;">8</td></tr> <tr><td style="border: none;">+</td><td style="border: none;">2</td><td style="border: none;">1</td><td style="border: none;">4</td></tr> <tr><td colspan="4" style="border: none;">8</td></tr> <tr><td colspan="4" style="border: none;">-----</td></tr> <tr><td style="border: none;">3</td><td style="border: none;">5</td><td style="border: none;">2</td><td style="border: none;">6</td></tr> <tr><td colspan="4" style="border: none;">1 1</td></tr> </table> </div> <div style="text-align: center; margin-top: 10px;"> <p><b>1,378 + 2,148 = 3,526</b></p> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; text-align: center; width: 45%;"> <tr><th style="font-size: 8px;">Thousands</th><th style="font-size: 8px;">Hundreds</th><th style="font-size: 8px;">Tens</th><th style="font-size: 8px;">Ones</th></tr> <tr><td style="height: 40px;">[Blue blocks]</td><td style="height: 40px;">[Blue blocks]</td><td style="height: 40px;">[Blue blocks]</td><td style="height: 40px;">[Blue blocks]</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center; width: 45%;"> <tr><th style="font-size: 8px;">Thousands</th><th style="font-size: 8px;">Hundreds</th><th style="font-size: 8px;">Tens</th><th style="font-size: 8px;">Ones</th></tr> <tr><td style="height: 40px;">[Red counters]</td><td style="height: 40px;">[Red counters]</td><td style="height: 40px;">[Yellow counters]</td><td style="height: 40px;">[Green counters]</td></tr> </table> </div> </div>	2,138	1,378	}		?		2,138	}		?		1,378	}		?		1	3	7	8	+	2	1	4	8				-----				3	5	2	6	1 1				Thousands	Hundreds	Tens	Ones	[Blue blocks]	[Blue blocks]	[Blue blocks]	[Blue blocks]	Thousands	Hundreds	Tens	Ones	[Red counters]	[Red counters]	[Yellow counters]	[Green counters]	<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>
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Skill: Add with up to 3 decimal places	Year: 5																																						
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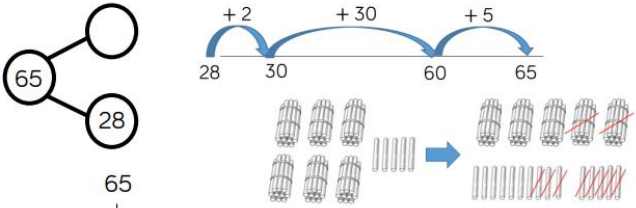
Skill: Add numbers with more than 4 digits	Year: 5/6																																																																
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>?</p> <p>104,328</p> <p>61,731</p> </div> <div style="text-align: center;"> <p>?</p> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="width: 100px; height: 20px;">104,328</td><td style="width: 100px; height: 20px;">61,731</td></tr> <tr><td colspan="2" style="border: none;">}</td></tr> <tr><td colspan="2" style="border: none;">?</td></tr> </table> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="width: 100px; height: 20px;">104,328</td></tr> <tr><td colspan="2" style="border: none;">}</td></tr> <tr><td colspan="2" style="border: none;">?</td></tr> </table> <table border="1" style="border-collapse: collapse; margin-bottom: 10px;"> <tr><td style="width: 100px; height: 20px;">61,731</td></tr> <tr><td colspan="2" style="border: none;">}</td></tr> <tr><td colspan="2" style="border: none;">?</td></tr> </table> </div> <div style="text-align: center; margin-top: 10px;"> <p><b>104,328 + 61,731 = 166,059</b></p> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; text-align: center; width: 45%;"> <tr><th style="font-size: 8px;">HTh</th><th style="font-size: 8px;">TTh</th><th style="font-size: 8px;">Th</th><th style="font-size: 8px;">H</th><th style="font-size: 8px;">T</th><th style="font-size: 8px;">O</th></tr> <tr><td style="height: 40px;">[Orange blocks]</td><td style="height: 40px;">[Purple blocks]</td><td style="height: 40px;">[Blue blocks]</td><td style="height: 40px;">[Green blocks]</td><td style="height: 40px;">[Yellow blocks]</td><td style="height: 40px;">[Red blocks]</td></tr> </table> <table border="1" style="border-collapse: collapse; text-align: center; width: 45%;"> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">0</td><td style="width: 20px; height: 20px;">4</td><td style="width: 20px; height: 20px;">3</td><td style="width: 20px; height: 20px;">2</td><td style="width: 20px; height: 20px;">8</td></tr> <tr><td colspan="6" style="border: none;">+</td></tr> <tr><td colspan="6" style="border: none;">61,731</td></tr> <tr><td colspan="6" style="border: none;">-----</td></tr> <tr><td style="width: 20px; height: 20px;">1</td><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;">6</td><td style="width: 20px; height: 20px;">0</td><td style="width: 20px; height: 20px;">5</td><td style="width: 20px; height: 20px;">9</td></tr> <tr><td colspan="6" style="border: none;">1</td></tr> </table> </div> </div>	104,328	61,731	}		?		104,328	}		?		61,731	}		?		HTh	TTh	Th	H	T	O	[Orange blocks]	[Purple blocks]	[Blue blocks]	[Green blocks]	[Yellow blocks]	[Red blocks]	1	0	4	3	2	8	+						61,731						-----						1	6	6	0	5	9	1						<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>
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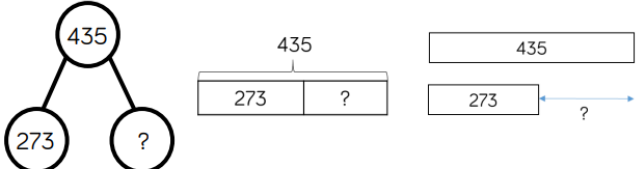
## Subtraction:

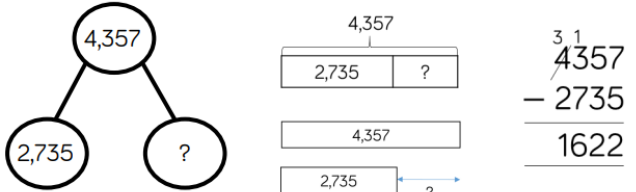
Skill	Year	Representations and models	
Subtract two 1-digit numbers to 10	1	Part-whole model Bar model Number shapes	Ten frames (within 10) Bead strings (10) Number tracks
Subtract 1 and 2-digit numbers to 20	1	Part-whole model Bar model Number shapes Ten frames (within 20)	Bead string (20) Number tracks Number lines (labelled) Straws
Subtract 1 and 2-digit numbers to 100	2	Part-whole model Bar model Number lines (labelled)	Number lines (blank) Straws Hundred square
Subtract two 2-digit numbers	2	Part-whole model Bar model Number lines (blank) Straws	Base 10 Place value counters

Skill	Year	Representations and models	
Subtract with up to 3-digits	3	Part-whole model Bar model	Base 10 Place value counters Column subtraction
Subtract with up to 4-digits	4	Part-whole model Bar model	Base 10 Place value counters Column subtraction
Subtract with more than 4 digits	5	Part-whole model Bar model	Place value counters Column subtraction
Subtract with up to 3 decimal places	5	Part-whole model Bar model	Place value counters Column subtraction



Skill: Subtract 1 and 2-digit numbers to 100	Year: 2/3																		
 <p>65</p> <p>28</p> <p>65</p> <p>?</p> <p>28</p> <p><b>65 - 28 = 37</b></p> <table border="1" style="width: 100px; margin: 10px 0;"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">     </td> <td style="text-align: center;">     </td> </tr> <tr> <td style="text-align: center;"><del>     </del></td> <td style="text-align: center;"><del>     </del></td> </tr> </tbody> </table> <table border="1" style="width: 100px; margin: 10px 0;"> <thead> <tr> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">●●●●</td> <td style="text-align: center;">●●●●</td> </tr> <tr> <td style="text-align: center;"><del>●●●●</del></td> <td style="text-align: center;"><del>●●●●</del></td> </tr> </tbody> </table> <table style="margin: 10px 0;"> <tr> <td style="text-align: right; padding-right: 5px;">5 1</td> <td style="text-align: right;">65</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">- 28</td> <td style="text-align: right;">37</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;"></td> </tr> </table>	Tens	Ones			<del>     </del>	<del>     </del>	Tens	Ones	●●●●	●●●●	<del>●●●●</del>	<del>●●●●</del>	5 1	65	- 28	37			<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.</p> <p>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>
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- 28	37																		

Skill: Subtract numbers with up to 3 digits	Year: 3																								
 <p>435</p> <p>273</p> <p>?</p> <p>435</p> <p>273</p> <p>?</p> <p><b>435 - 273 = 262</b></p> <table border="1" style="width: 100px; margin: 10px 0;"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">■ ■ ■</td> <td style="text-align: center;">     </td> <td style="text-align: center;">     </td> </tr> <tr> <td style="text-align: center;"><del>■ ■ ■</del></td> <td style="text-align: center;"><del>     </del></td> <td style="text-align: center;"><del>     </del></td> </tr> </tbody> </table> <table border="1" style="width: 100px; margin: 10px 0;"> <thead> <tr> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">● ● ●</td> <td style="text-align: center;">● ● ● ● ●</td> <td style="text-align: center;">● ● ● ● ●</td> </tr> <tr> <td style="text-align: center;"><del>● ● ●</del></td> <td style="text-align: center;"><del>● ● ● ● ●</del></td> <td style="text-align: center;"><del>● ● ● ● ●</del></td> </tr> </tbody> </table> <table style="margin: 10px 0;"> <tr> <td style="text-align: right; padding-right: 5px;">3 1</td> <td style="text-align: right;">435</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">- 273</td> <td style="text-align: right;">262</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;"></td> </tr> </table>	Hundreds	Tens	Ones	■ ■ ■			<del>■ ■ ■</del>	<del>     </del>	<del>     </del>	Hundreds	Tens	Ones	● ● ●	● ● ● ● ●	● ● ● ● ●	<del>● ● ●</del>	<del>● ● ● ● ●</del>	<del>● ● ● ● ●</del>	3 1	435	- 273	262			<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>
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Skill: Subtract numbers with up to 4 digits	Year: 4																														
 <p>4,357</p> <p>2,735</p> <p>?</p> <p>4,357</p> <p>2,735</p> <p>?</p> <p><b>4,357 - 2,735 = 1,622</b></p> <table border="1" style="width: 100px; margin: 10px 0;"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">■ ■ ■</td> <td style="text-align: center;">■ ■ ■</td> <td style="text-align: center;">     </td> <td style="text-align: center;">     </td> </tr> <tr> <td style="text-align: center;"><del>■ ■ ■</del></td> <td style="text-align: center;"><del>■ ■ ■</del></td> <td style="text-align: center;"><del>     </del></td> <td style="text-align: center;"><del>     </del></td> </tr> </tbody> </table> <table border="1" style="width: 100px; margin: 10px 0;"> <thead> <tr> <th>Thousands</th> <th>Hundreds</th> <th>Tens</th> <th>Ones</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">● ● ●</td> <td style="text-align: center;">● ● ● ● ●</td> <td style="text-align: center;">● ● ● ● ●</td> <td style="text-align: center;">● ● ● ● ●</td> </tr> <tr> <td style="text-align: center;"><del>● ● ●</del></td> <td style="text-align: center;"><del>● ● ● ● ●</del></td> <td style="text-align: center;"><del>● ● ● ● ●</del></td> <td style="text-align: center;"><del>● ● ● ● ●</del></td> </tr> </tbody> </table> <table style="margin: 10px 0;"> <tr> <td style="text-align: right; padding-right: 5px;">3 1</td> <td style="text-align: right;">4357</td> </tr> <tr> <td style="text-align: right; padding-right: 5px;">- 2735</td> <td style="text-align: right;">1622</td> </tr> <tr> <td style="border-top: 1px solid black;"></td> <td style="border-top: 1px solid black;"></td> </tr> </table>	Thousands	Hundreds	Tens	Ones	■ ■ ■	■ ■ ■			<del>■ ■ ■</del>	<del>■ ■ ■</del>	<del>     </del>	<del>     </del>	Thousands	Hundreds	Tens	Ones	● ● ●	● ● ● ● ●	● ● ● ● ●	● ● ● ● ●	<del>● ● ●</del>	<del>● ● ● ● ●</del>	<del>● ● ● ● ●</del>	<del>● ● ● ● ●</del>	3 1	4357	- 2735	1622			<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>
Thousands	Hundreds	Tens	Ones																												
■ ■ ■	■ ■ ■																														
<del>■ ■ ■</del>	<del>■ ■ ■</del>	<del>     </del>	<del>     </del>																												
Thousands	Hundreds	Tens	Ones																												
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<del>● ● ●</del>	<del>● ● ● ● ●</del>	<del>● ● ● ● ●</del>	<del>● ● ● ● ●</del>																												
3 1	4357																														
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Skill: Subtract numbers with more than 4 digits	Year: 5/6																																													
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} 294,382 \\ - 182,501 \\ \hline \end{array}</math> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">294,382</div> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">182,501</div> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">?</div> </div> <div style="text-align: center; margin-top: 10px; border: 1px solid black; padding: 5px; border-radius: 10px;"> <math>294,382 - 182,501 = 111,881</math> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; text-align: center; width: 30%;"> <thead> <tr style="background-color: #d9e1f2;"> <th style="width: 12.5%;">HTh</th> <th style="width: 12.5%;">TTh</th> <th style="width: 12.5%;">Th</th> <th style="width: 12.5%;">H</th> <th style="width: 12.5%;">T</th> <th style="width: 12.5%;">O</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="border-collapse: collapse; text-align: center; width: 30%;"> <tbody> <tr><td>2</td><td>9</td><td>3</td><td>1</td><td>3</td><td>8</td><td>2</td></tr> <tr><td>-</td><td>1</td><td>8</td><td>2</td><td>5</td><td>0</td><td>1</td></tr> <tr><td></td><td>1</td><td>1</td><td>1</td><td>8</td><td>8</td><td>1</td></tr> </tbody> </table> </div>	HTh	TTh	Th	H	T	O																			2	9	3	1	3	8	2	-	1	8	2	5	0	1		1	1	1	8	8	1	<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>
HTh	TTh	Th	H	T	O																																									
2	9	3	1	3	8	2																																								
-	1	8	2	5	0	1																																								
	1	1	1	8	8	1																																								


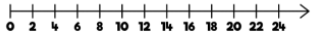



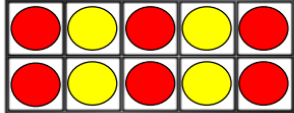

Skill: Subtract with up to 3 decimal places	Year: 5/6																		
<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> </div> <div style="text-align: center;"> <math display="block">\begin{array}{r} 5.43 \\ - 2.7 \\ \hline \end{array}</math> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">5.43</div> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">2.7</div> <div style="border: 1px solid black; padding: 5px; width: 100px; text-align: center;">?</div> </div> <div style="text-align: center; margin-top: 10px; border: 1px solid black; padding: 5px; border-radius: 10px;"> <math>5.43 - 2.7 = 2.73</math> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <table border="1" style="border-collapse: collapse; text-align: center; width: 30%;"> <thead> <tr style="background-color: #d9e1f2;"> <th style="width: 33%;">Ones</th> <th style="width: 33%;">Tenths</th> <th style="width: 33%;">Hundredths</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> <table border="1" style="border-collapse: collapse; text-align: center; width: 30%;"> <thead> <tr style="background-color: #d9e1f2;"> <th style="width: 33%;">Ones</th> <th style="width: 33%;">Tenths</th> <th style="width: 33%;">Hundredths</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table> </div>	Ones	Tenths	Hundredths							Ones	Tenths	Hundredths							<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>
Ones	Tenths	Hundredths																	
Ones	Tenths	Hundredths																	


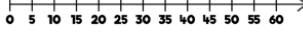
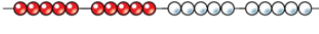


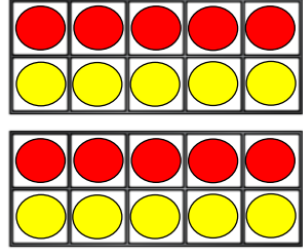
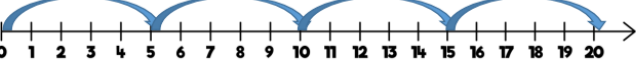
## Times tables:


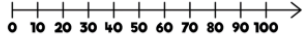



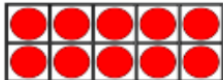
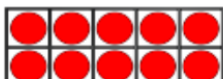

Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 2-times table	2	Bar model Number shapes Counters Money	Ten frames Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 5-times table	2	Bar model Number shapes Counters Money	Ten frames Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 10-times table	2	Hundred square Number shapes Counters Money	Ten frames Bead strings Number lines Base 10


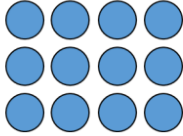
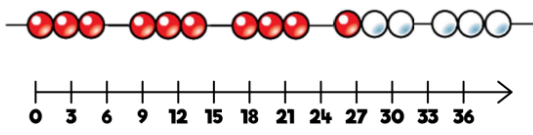
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 3-times table	3	Hundred square Number shapes Counters	Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 4-times table	3	Hundred square Number shapes Counters	Bead strings Number lines Everyday objects
Recall and use multiplication and division facts for the 8-times table	3	Hundred square Number shapes	Bead strings Number tracks Everyday objects
Recall and use multiplication and division facts for the 6-times table	4	Hundred square Number shapes	Bead strings Number tracks Everyday objects


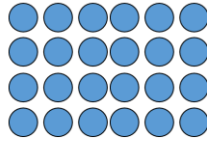
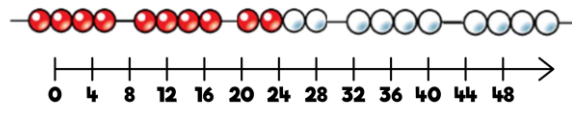
Skill	Year	Representations and models	
Recall and use multiplication and division facts for the 7-times table	4	Hundred square Number shapes	Bead strings Number lines
Recall and use multiplication and division facts for the 9-times table	4	Hundred square Number shapes	Bead strings Number lines
Recall and use multiplication and division facts for the 11-times table	4	Hundred square Base 10	Place value counters Number lines
Recall and use multiplication and division facts for the 12-times table	4	Hundred square Base 10	Place value counters Number lines

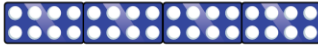


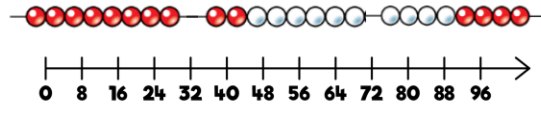
Skill: 2 times table	Year: 2																																																		
     <table border="1" data-bbox="231 515 502 649"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> </table>  	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	<p>Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.</p> <p>Look for patterns in the two times table, using concrete manipulatives to support. Notice how all the numbers are even and there is a pattern in the ones.</p> <p>Use different models to develop fluency.</p>
1	2	3	4	5	6	7	8	9	10																																										
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21	22	23	24	25	26	27	28	29	30																																										
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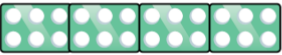

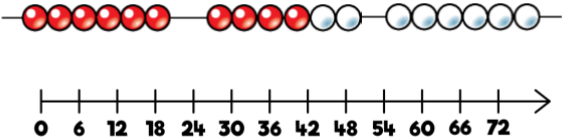
Skill: 5 times table	Year: 2																																																		
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1	2	3	4	5	6	7	8	9	10																																										
11	12	13	14	15	16	17	18	19	20																																										
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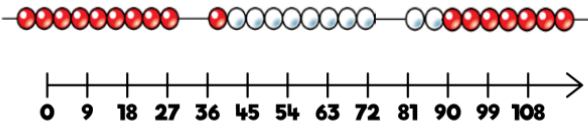
Skill: 10 times table	Year: 2																																																																																																				
        <table border="1" data-bbox="582 1691 861 1960"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr> <tr><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td></tr> <tr><td>31</td><td>32</td><td>33</td><td>34</td><td>35</td><td>36</td><td>37</td><td>38</td><td>39</td><td>40</td></tr> <tr><td>41</td><td>42</td><td>43</td><td>44</td><td>45</td><td>46</td><td>47</td><td>48</td><td>49</td><td>50</td></tr> <tr><td>51</td><td>52</td><td>53</td><td>54</td><td>55</td><td>56</td><td>57</td><td>58</td><td>59</td><td>60</td></tr> <tr><td>61</td><td>62</td><td>63</td><td>64</td><td>65</td><td>66</td><td>67</td><td>68</td><td>69</td><td>70</td></tr> <tr><td>71</td><td>72</td><td>73</td><td>74</td><td>75</td><td>76</td><td>77</td><td>78</td><td>79</td><td>80</td></tr> <tr><td>81</td><td>82</td><td>83</td><td>84</td><td>85</td><td>86</td><td>87</td><td>88</td><td>89</td><td>90</td></tr> <tr><td>91</td><td>92</td><td>93</td><td>94</td><td>95</td><td>96</td><td>97</td><td>98</td><td>99</td><td>100</td></tr> </table>	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	<p>Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.</p> <p>Look for patterns in the ten times table, using concrete manipulatives to support. Notice the pattern in the digits- the ones are always 0, and the tens increase by 1 ten each time.</p>
1	2	3	4	5	6	7	8	9	10																																																																																												
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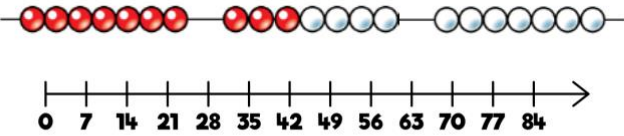
Skill: 3 times table		Year: 3																																																	
		<p>Encourage daily counting in multiples both forwards and backwards. This can be supported using a number line or a hundred square.</p> <p>Look for patterns in the three times table, using concrete manipulatives to support. Notice the odd, even, odd, even pattern using number shapes to support. Highlight the pattern in the ones using a hundred square.</p>																																																	
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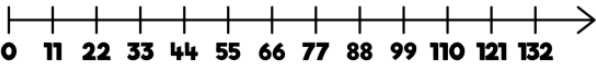
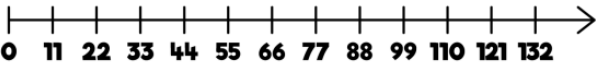
Skill: 4 times table		Year: 3																																																	
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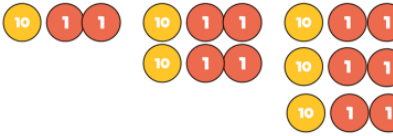
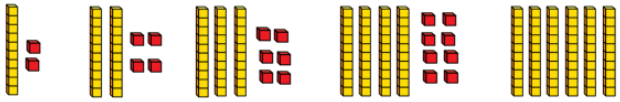
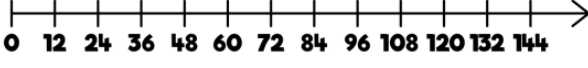
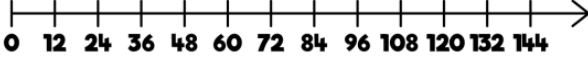
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Skill: 9 times table						Year: 4																																																																																																				
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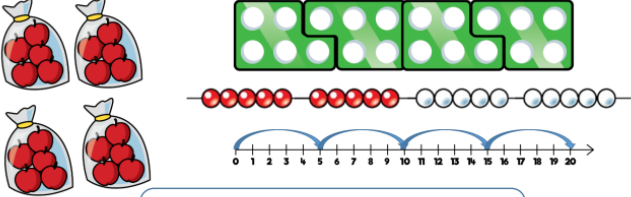
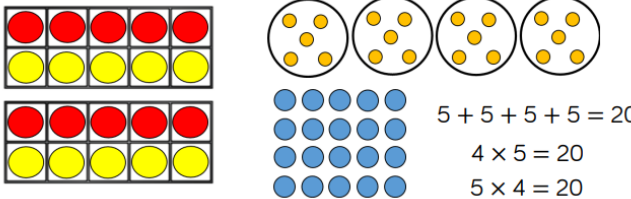
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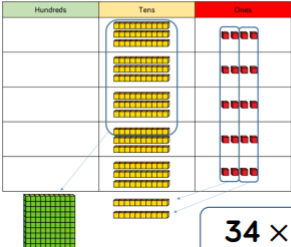
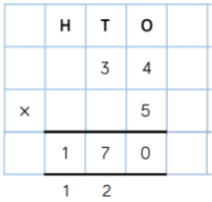
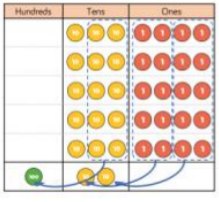
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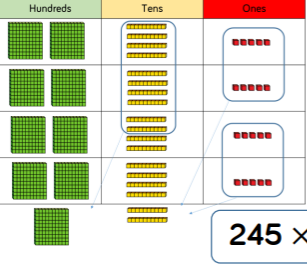
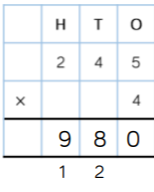
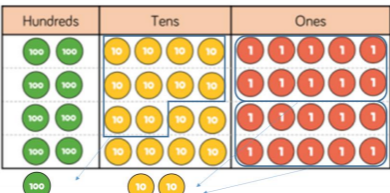
## Multiplication:

Skill	Year	Representations and models	
Solve one-step problems with multiplication	1/2	Bar model Number shapes Counters	Ten frames Bead strings Number lines
Multiply 2-digit by 1-digit numbers	3/4	Place value counters Base 10	Expanded written method Short written method
Multiply 3-digit by 1-digit numbers	4	Place value counters Base 10	Short written method
Multiply 4-digit by 1-digit numbers	5	Place value counters	Short written method

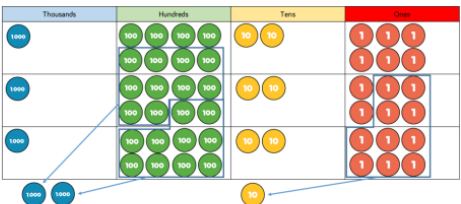
Skill	Year	Representations and models	
Multiply 2-digit by 2-digit numbers	5	Place value counters Base 10	Short written method Grid method
Multiply 2-digit by 3-digit numbers	5	Place value counters	Short written method Grid method
Multiply 2-digit by 4-digit numbers	5/6	Formal written method	

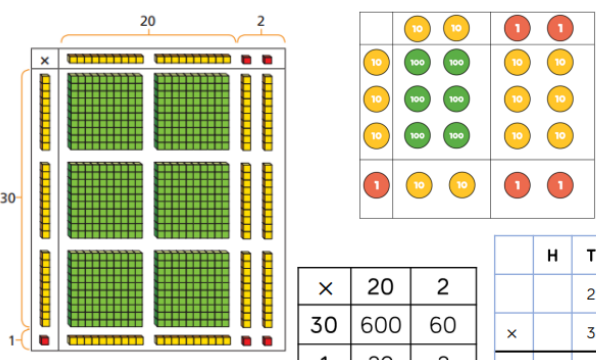
Skill: Solve 1-step problems using multiplication	Year: 1/2
 <p data-bbox="359 459 746 533">One bag holds 5 apples. How many apples do 4 bags hold?</p>  <p data-bbox="657 645 858 745"> <math>5 + 5 + 5 + 5 = 20</math>  <math>4 \times 5 = 20</math>  <math>5 \times 4 = 20</math> </p>	<p data-bbox="885 275 1066 376">Children represent multiplication as repeated addition in many different ways.</p> <p data-bbox="885 405 1074 584">In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record multiplication formally.</p> <p data-bbox="885 613 1074 689">In Year 2, children are introduced to the multiplication symbol.</p>

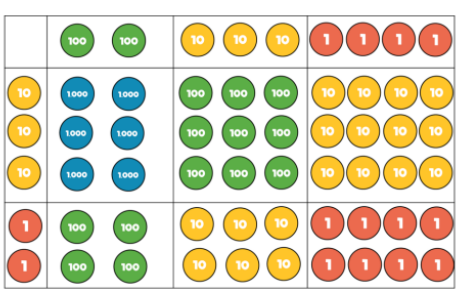
Skill: Multiply 2-digit numbers by 1-digit numbers	Year: 3/4
 <p data-bbox="459 1070 678 1120"><math>34 \times 5 = 170</math></p>  	<p data-bbox="885 857 1066 1037">Informal methods and the expanded method are used in Year 3 before moving on to the short multiplication method in Year 4.</p> <p data-bbox="885 1037 1066 1294">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.</p>

Skill: Multiply 3-digit numbers by 1-digit numbers	Year: 4
 <p data-bbox="459 1668 678 1718"><math>245 \times 4 = 980</math></p>  	<p data-bbox="885 1447 1066 1626">When moving to 3-digit by 1-digit multiplication, encourage children to move towards the short, formal written method.</p> <p data-bbox="885 1626 1066 1928">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.</p>



Skill: Multiply 4-digit numbers by 1-digit numbers	Year: 5																									
 <div style="border: 1px solid black; border-radius: 10px; padding: 5px; width: fit-content; margin: 10px auto;"> <math>1,826 \times 3 = 5,478</math> </div> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <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>2</td><td></td><td>1</td><td></td></tr> </table>		Th	H	T	O		1	8	2	6	x				3		5	4	7	8		2		1		<p>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.</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 written method.</p>
	Th	H	T	O																						
	1	8	2	6																						
x				3																						
	5	4	7	8																						
	2		1																							

Skill: Multiply 2-digit numbers by 2-digit numbers	Year: 5																				
 <div style="border: 1px solid black; border-radius: 10px; padding: 5px; width: fit-content; margin: 10px auto;"> <math>22 \times 31 = 682</math> </div> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tr><td></td><td>H</td><td>T</td><td>O</td></tr> <tr><td></td><td></td><td>2</td><td>2</td></tr> <tr><td>x</td><td></td><td>3</td><td>1</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> </table>		H	T	O			2	2	x		3	1		6	6	0		6	8	2	<p>When multiplying a multi-digit number by 2-digits, use the area model to help children 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.</p> <p>The grid method matches the area model as an initial written method before moving on to the formal written multiplication method.</p>
	H	T	O																		
		2	2																		
x		3	1																		
	6	6	0																		
	6	8	2																		

Skill: Multiply 3-digit numbers by 2-digit numbers	Year: 5												
 <div style="border: 1px solid black; border-radius: 10px; padding: 5px; width: fit-content; margin: 10px auto;"> <math>234 \times 32 = 7,488</math> </div> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <tr><td>x</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>	x	200	30	4	30	6,000	900	120	2	400	60	8	<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 numbers.</p> <p>Children should now move towards the formal written method, seeing the links with the grid method.</p>
x	200	30	4										
30	6,000	900	120										
2	400	60	8										

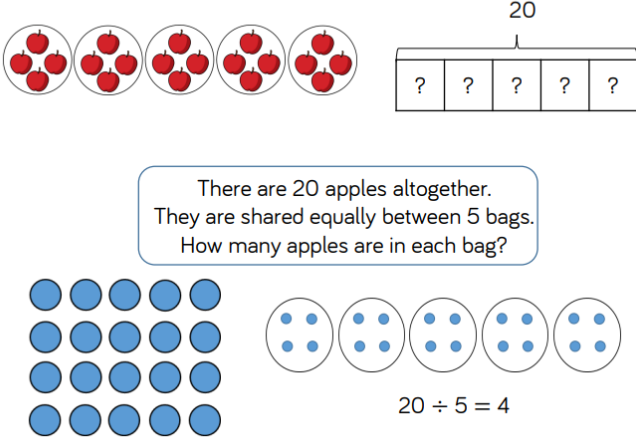


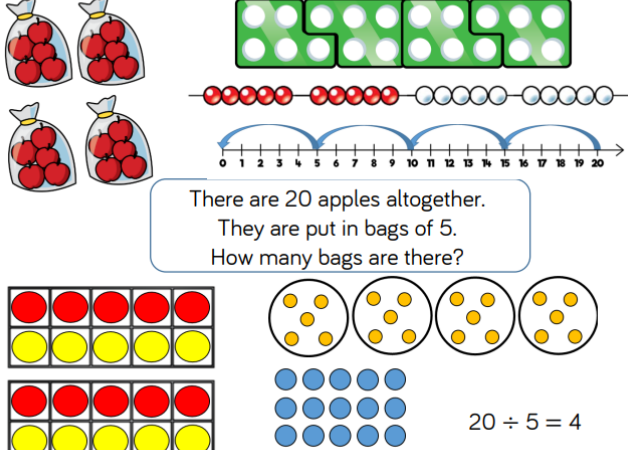
## Division:

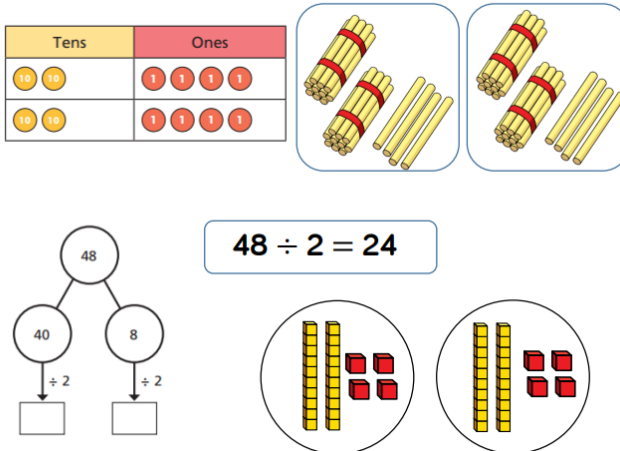
Skill	Year	Representations and models	
Solve one-step problems with division (sharing)	1/2	Bar model Real life objects	Arrays Counters
Solve one-step problems with division (grouping)	1/2	Real life objects Number shapes Bead strings Ten frames	Number lines Arrays Counters
Divide 2-digits by 1-digit (no exchange sharing)	3	Straws Base 10 Bar model	Place value counters Part-whole model
Divide 2-digits by 1-digit (sharing with exchange)	3	Straws Base 10 Bar model	Place value counters Part-whole model

Skill	Year	Representations and models	
Divide 2-digits by 1-digit (sharing with remainders)	3/4	Straws Base 10 Bar model	Place value counters Part-whole model
Divide 2-digits by 1-digit (grouping)	4/5	Place value counters Counters	Place value grid Written short division
Divide 3-digits by 1-digit (sharing with exchange)	4	Base 10 Bar model	Place value counters Part-whole model
Divide 3-digits by 1-digit (grouping)	4/5	Place value counters Counters	Place value grid Written short division

Skill	Year	Representations and models	
Divide 4-digits by 1-digit (grouping)	5	Place value counters Counters	Place value grid Written short division
Divide multi-digits by 2-digits (short division)	6	Written short division	List of multiples
Divide multi-digits by 2-digits (long division)	6	Written long division	List of multiples

Skill: Solve 1-step problems using multiplication (sharing)	Year: 1/2
 <p style="text-align: center;">20</p> <p style="text-align: center;">? ? ? ? ?</p> <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>There are 20 apples altogether. They are shared equally between 5 bags. How many apples are in each bag?</p> </div> <p style="text-align: center;"><math>20 \div 5 = 4</math></p>	<p>Children solve problems by sharing amounts into equal groups.</p> <p>In Year 1, children use concrete and pictorial representations to solve problems. They are not expected to record division formally.</p> <p>In Year 2, children are introduced to the division symbol.</p>

Skill: Solve 1-step problems using division (grouping)	Year: 1/2
 <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p>There are 20 apples altogether. They are put in bags of 5. How many bags are there?</p> </div> <p style="text-align: center;"><math>20 \div 5 = 4</math></p>	<p>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.</p>

Skill: Divide 2-digits by 1-digit (sharing with no exchange)	Year: 3
 <div style="border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <p><math>48 \div 2 = 24</math></p> </div>	<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>





Skill: Divide multi digits by 2-digits (short division)										Year: 6																		
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Skill: Divide multi-digits by 2-digits (long division)										Year: 6																																																						
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Skill: Divide multi digits by 2-digits (long division)										Year: 6																																										
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