

Biscovey Primary Academy



Calculation Policy

Addition and Subtraction
and

Multiplication and Division

Calculation Policy

Welcome to our Calculation policy. This incorporates elements of the White Rose Maths Calculation Policy for KS1 and into early KS2.

This document is broken down into addition and subtraction, and multiplication and division.

At the start of each section there is an overview of the different models and images that can support the teaching of different concepts.

Each operation is then broken down into skills and each skill has a dedicated page showing the different models and images that could be used to effectively teach that concept.

There is an overview of skills linked to year groups to support consistency through the school.

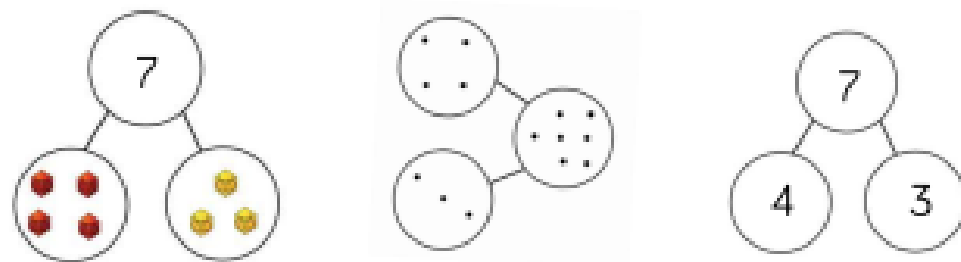
We understand that for children to become competent mathematicians they must be given the opportunity to embed their learning using concrete resources, then develop their understanding of pictorial representations before they are able to solve abstract problems.

Concrete → Pictorial → Abstract

Calculation Policy

Addition and Subtraction

Part-Whole Model

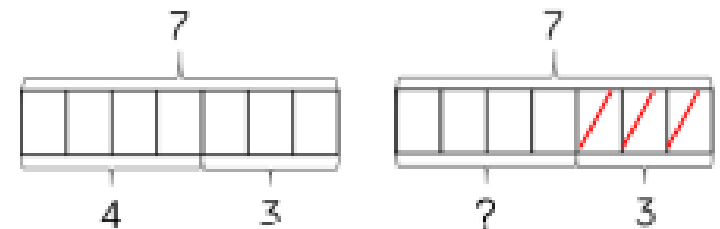


Bar Model (single)

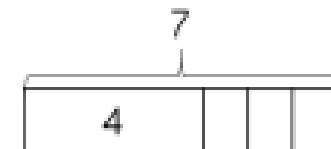
Concrete



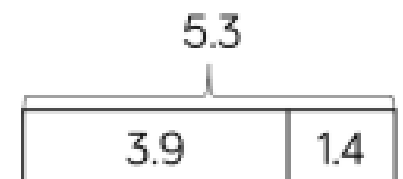
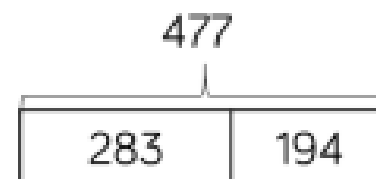
Discrete



Combination

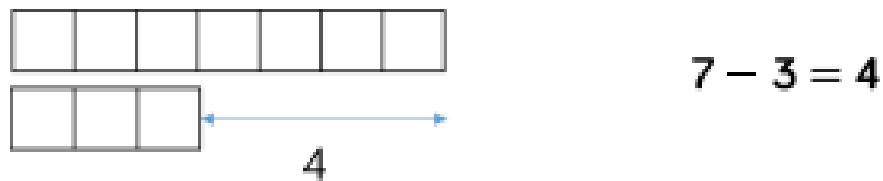
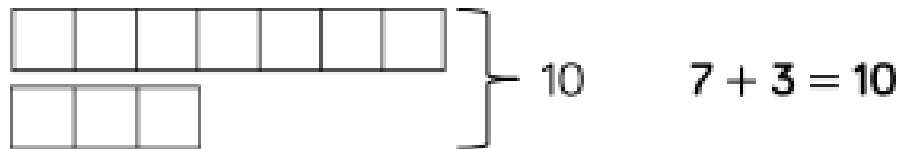


Continuous



Bar Model (multiple)

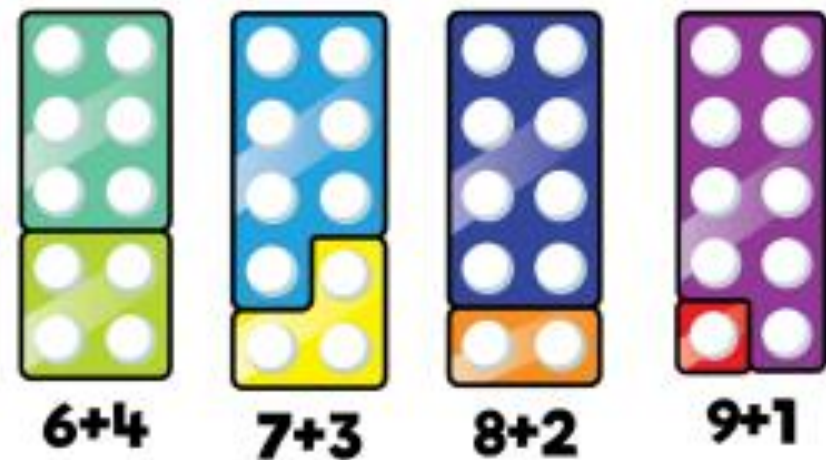
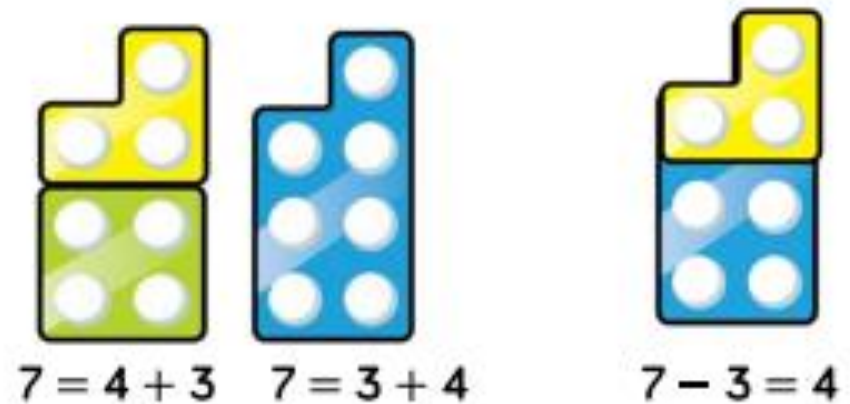
Discrete



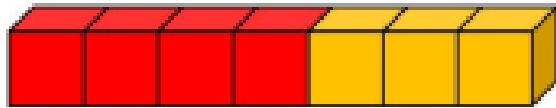
Continuous



Number Shapes



Cubes



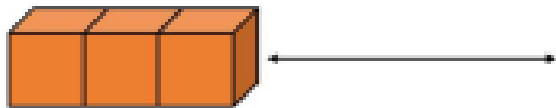
$$7 = 4 + 3$$



$$7 = 3 + 4$$

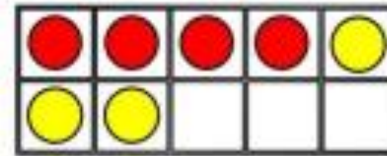


$$7 - 3 = 4$$



$$7 - 3 = 4$$

Ten Frames (within 10)



$$4 + 3 = 7$$

$$3 + 4 = 7$$

$$7 - 3 = 4$$

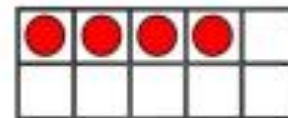
$$7 - 4 = 3$$

4 is a part.

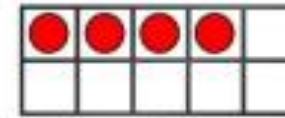
3 is a part.

7 is the whole.

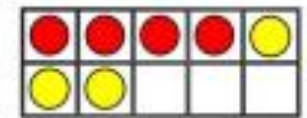
First



Then

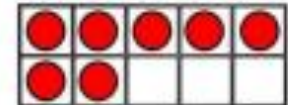


Now



$$4 + 3 = 7$$

First



Then

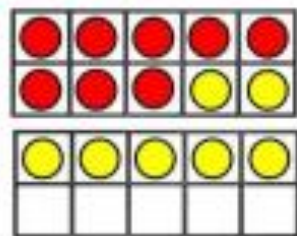
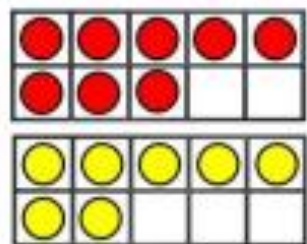


Now



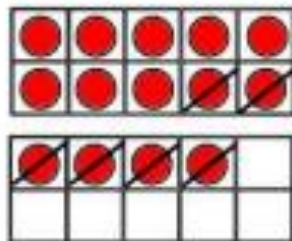
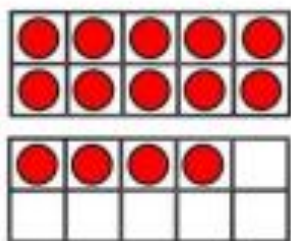
$$7 - 3 = 4$$

Ten Frames (within 20)



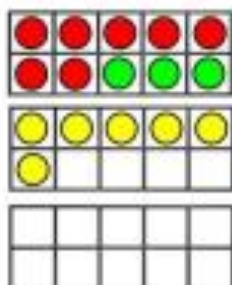
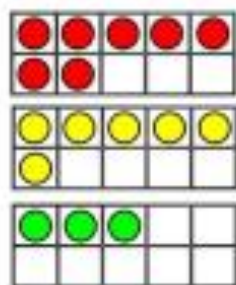
$$8 + 7 = 15$$

2 5



$$14 - 6 = 8$$

4 2



$$7 + 6 + 3 = 16$$

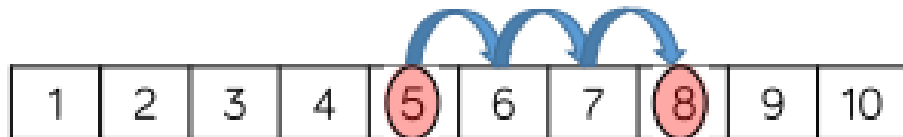
10

Bead Strings

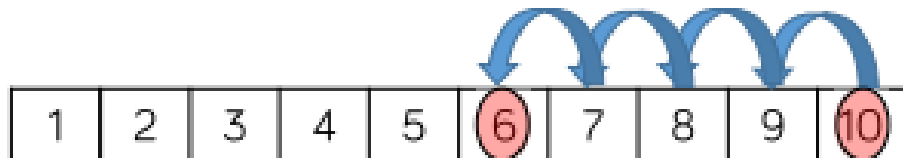


Number Tracks

$$5 + 3 = 8$$



$$10 - 4 = 6$$

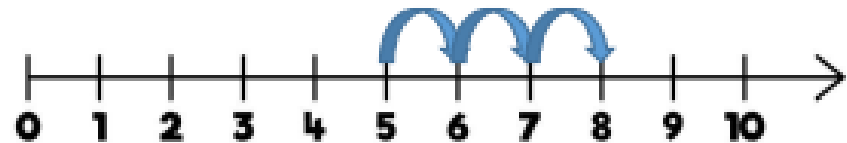


$$8 + 7 = 15$$



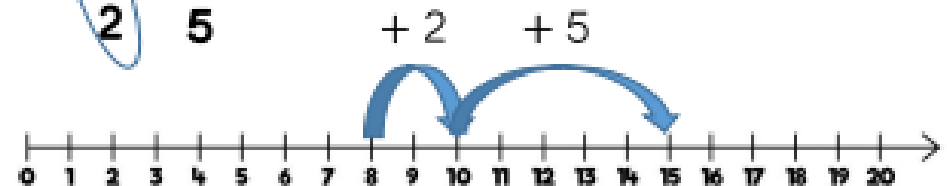
Number Lines (labelled)

$$5 + 3 = 8$$



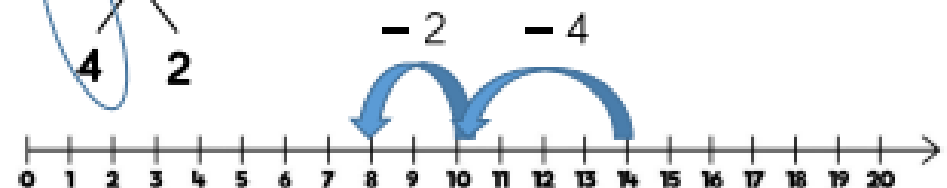
$$8 + 7 = 15$$

2 5



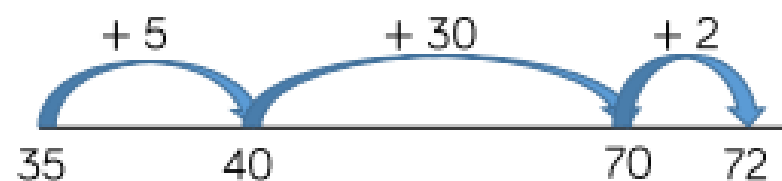
$$14 - 6 = 8$$

4 2

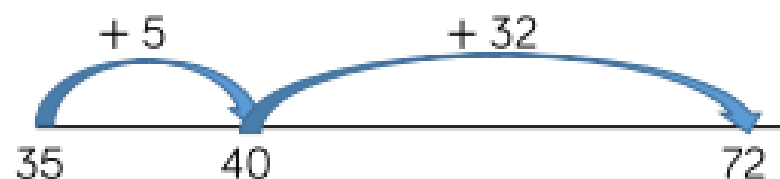


Number Lines (blank)

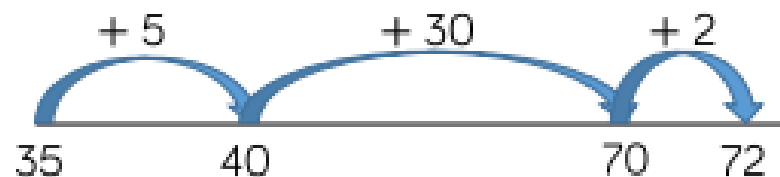
$$35 + 37 = 72$$



$$35 + 37 = 72$$

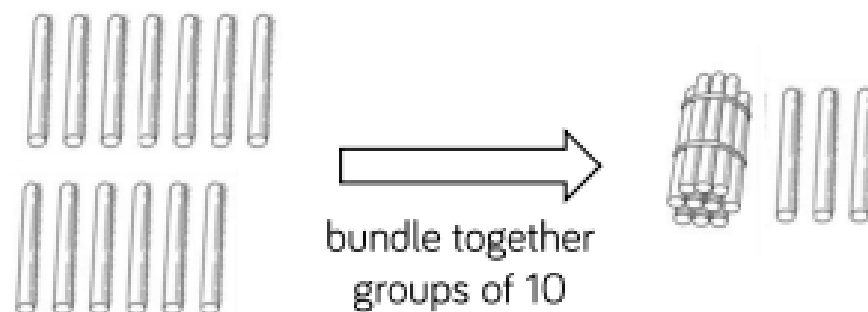


$$72 - 35 = 37$$

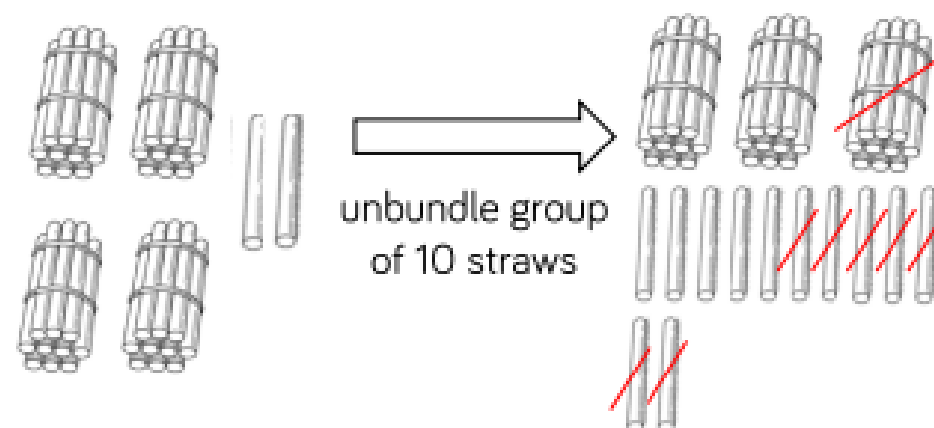


Straws

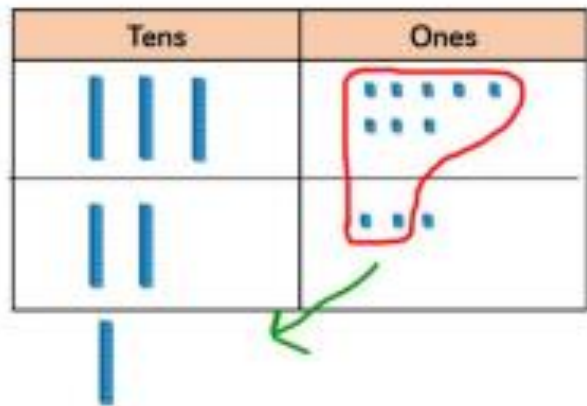
$$7 + 6 = 13$$



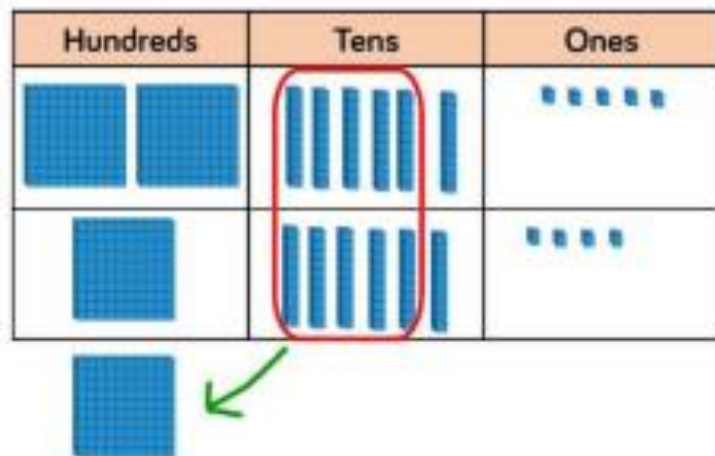
$$42 - 17 = 25$$



Base 10/Dienes (addition)

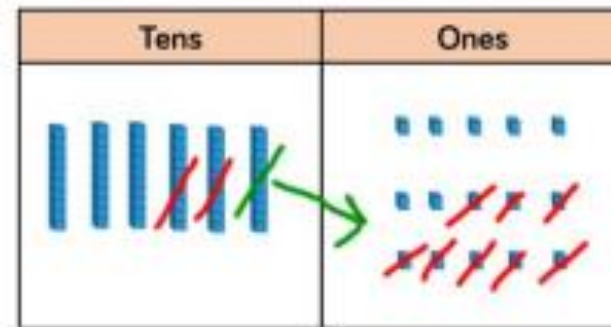


$$\begin{array}{r} 38 \\ + 23 \\ \hline 61 \\ 1 \end{array}$$

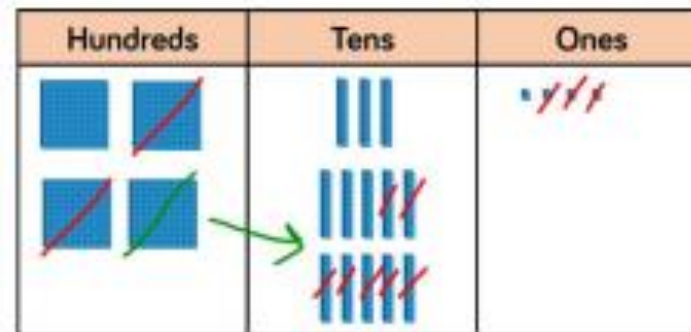


$$\begin{array}{r} 265 \\ + 164 \\ \hline 429 \\ 1 \end{array}$$

Base 10/Dienes (subtraction)

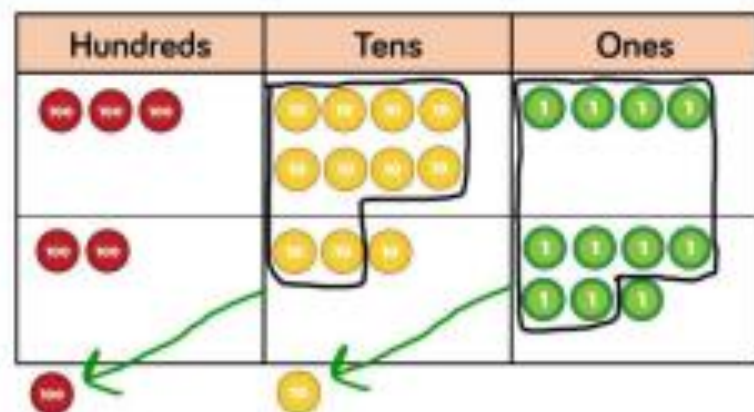


$$\begin{array}{r} 5 \quad 1 \\ 65 \\ - 28 \\ \hline 37 \end{array}$$

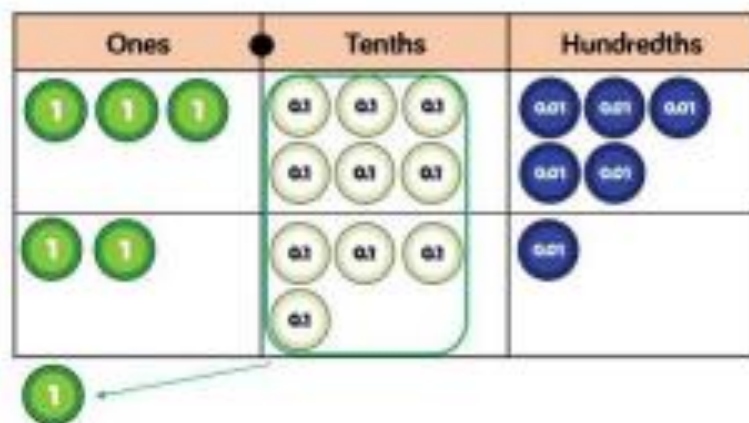


$$\begin{array}{r} 3 \quad 1 \\ 435 \\ - 273 \\ \hline 162 \end{array}$$

Place Value Counters (addition)

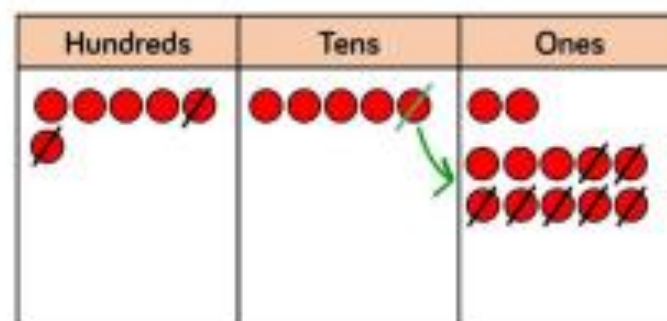


$$\begin{array}{r} 384 \\ + 237 \\ \hline 621 \\ 11 \end{array}$$

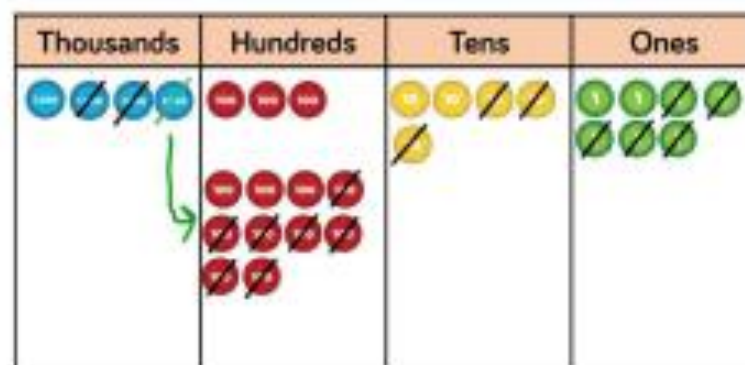


$$\begin{array}{r} 3.65 \\ + 2.41 \\ \hline 6.06 \\ 1 \end{array}$$

Place Value Counters (Subtraction)



$$\begin{array}{r} 632 \\ - 207 \\ \hline 445 \end{array}$$



$$\begin{array}{r} 4357 \\ - 2735 \\ \hline 1622 \end{array}$$

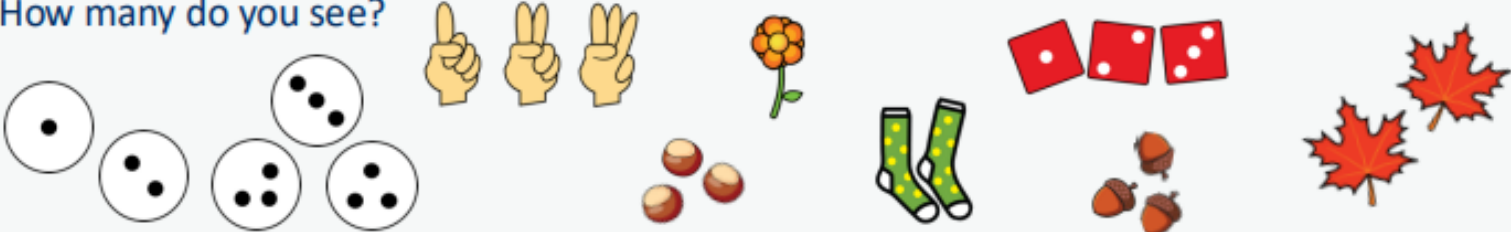
Progression of skills - Addition

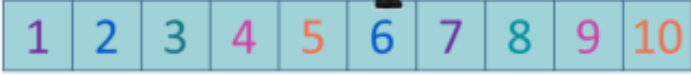
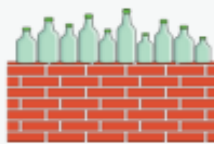
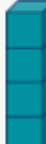
Year group	Skill
Nursery	• Subitise to 3 • Count how many • Make numbers to 5 • Add 1 more (through songs and rhymes)
Reception	• Conceptually subitise to 5 • 1 more • Notice the composition of numbers within 10 • Combine 2 groups • Add more
Year 1	• Add together • Add more • Bonds within 10 • Related facts within 20 • Missing numbers

Progression of skills - Addition

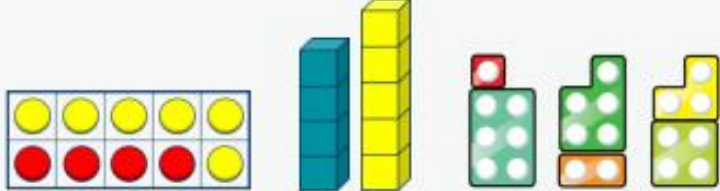
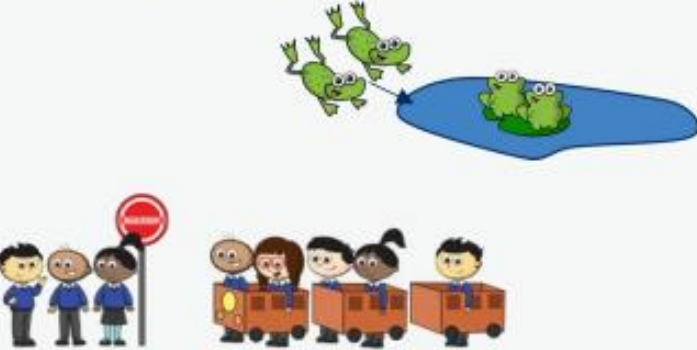
Year group	Skill
Year 2	• Add 1s to any number (related facts) • Add three 1-digit numbers • Add across a 10 • Add multiples of 10 • Add 10s to any number • Add two 2-digit numbers (not across a ten) • Add two 2-digit numbers (across a ten) • Missing numbers
Year 3	• Add 1s, 10s and 100s to a 3-digit number • Add two numbers (no exchange) • Add two numbers across a 10 or 100 • Complements to 100 • Add fractions with the same denominator within 1 whole • Calculate the duration of events

Addition

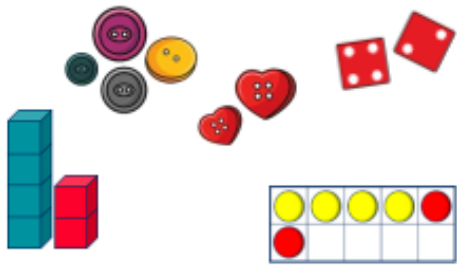
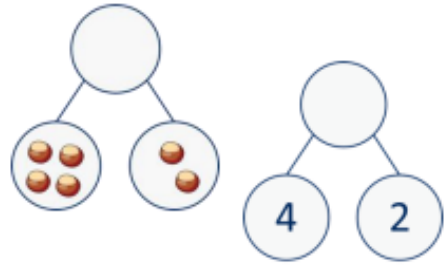
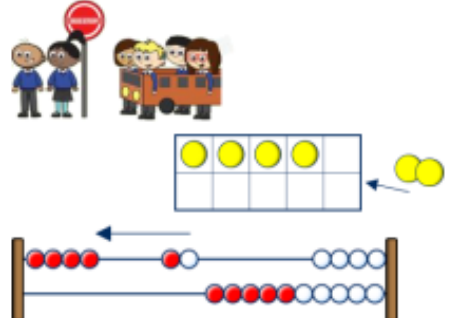
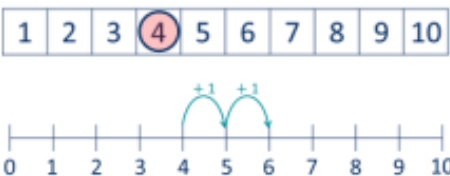
Nursery	- Begin to have an understanding of numbers to 5 - We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.	
Progression of skills	Key representations	
Subitise to 3 Instantly see how many.	How many do you see? 	
Count how many Begin to count objects using 1-1 correspondence.	How many are there? 1 2 3 4 5 	Count out ... from a larger group. E.g. Collect 3 beanbags for a game. 
Make numbers to 5 Start by showing 1, 2 and 3 using fingers.	Show me... 	Begin to link numerals to quantities. 
Add 1 more Through stories, songs and rhymes.	How many do I have now? 	

Reception	- Have a deep understanding of numbers to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5 - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts.	
Progression of skills	Key representations	
Conceptually subitise to 5 Notice the parts that make up the whole.	What do you see? How do you see it?     	
1 more Continue to link to stories, songs and rhymes.	1 more than ... is ...   	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	How many...? How many...? How many altogether?    	How many ways can you make...?    

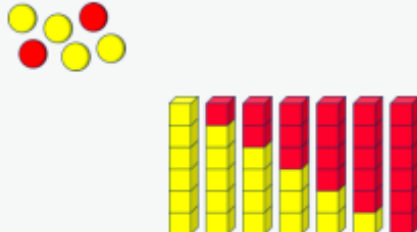
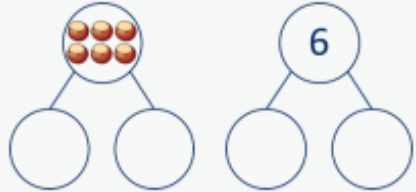
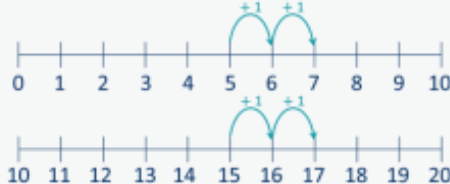
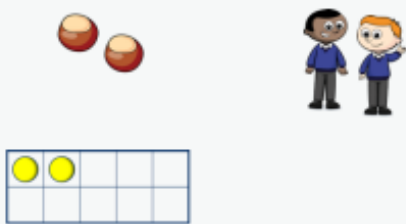
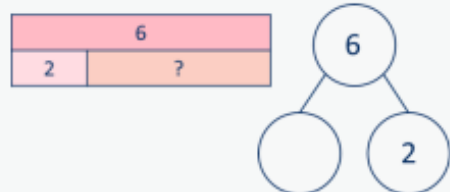
Addition

Progression of skills	Key representations	
Combine 2 groups 2 groups are combined to find the total.	There are There are There are altogether. 	... and ... make ... 
Add more A quantity is increased.	First... Then.... Now.... 	I have I add more. Now I have.... 

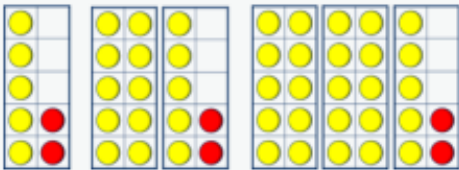
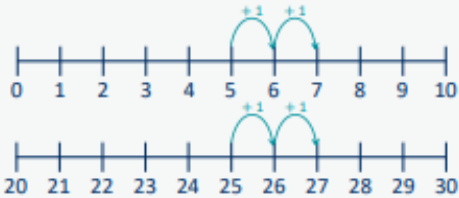
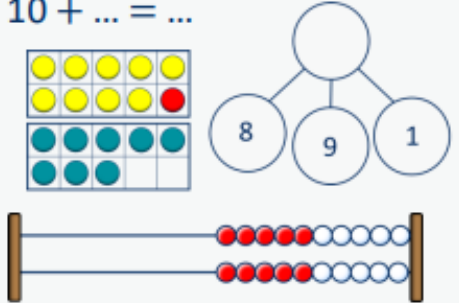
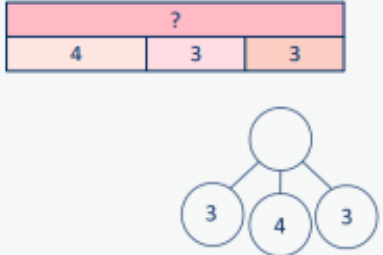
Addition

Year 1	- Read, write and interpret mathematical statements involving addition (+) and equals (=) signs. - Represent and use number bonds within 20 - Add 1-digit and 2-digit numbers to 20, including zero. - Solve one-step problems that involve addition, using concrete objects and pictorial representations, and missing number problems such as $7 = \square + 2$		
Progression of skills	Key representations		
Add together (aggregation) 2 quantities are combined to find the total.	There are ... There are ... There are ... altogether. 	... is a part. ... is a part. ... is the whole. 	... plus ... is equal to is equal to ... + ... $4 + 2 = 6$ $2 + 4 = 6$ $6 = 4 + 2$ $6 = 2 + 4$
Add more (augmentation) A quantity is increased.	First... Then... Now... 	I start at ... I jump on ... I land on ... 	... plus ... is equal to is equal to ... + ... $4 + 2 = 6$ $2 + 4 = 6$ $6 = 4 + 2$ $6 = 2 + 4$

Addition

Progression of skills	Key representations		
Bonds within 10 Include bonds for each number within 10 Encourage children to notice patterns.	... is made of ... and and ... make ... 	... can be partitioned into ... and ... 	... plus ... is equal to ... $6 + 0 = 6$ $5 + 1 = 6$ $4 + 2 = 6$ $3 + 3 = 6$ $2 + 4 = 6$ $1 + 5 = 6$ $0 + 6 = 6$
Related facts within 20 Make links to known facts.	I know that ... and ... = ... so ... and ... = ... 	... more than ... is ... so ... more than ... is ... 	What patterns do you notice? $5 + 2 = 7$ $15 + 2 = 17$ $7 = 5 + 2$ $17 = 15 + 2$
Missing numbers Make links to known facts.	How many more do you need to make ...? 	If ... is the whole and ... is a part, the other part must be... 	... plus ... is equal to ... $2 + \square = 6$ $6 = 2 + \square$ 

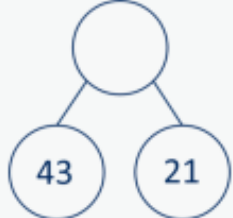
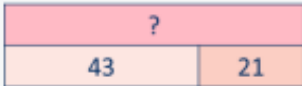
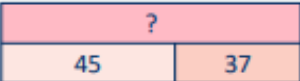
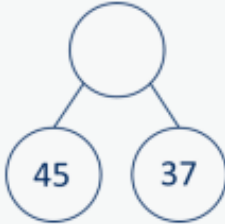
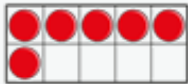
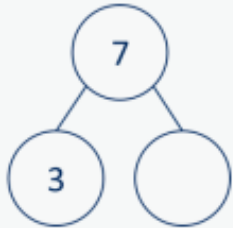
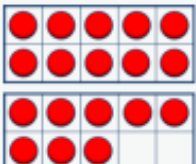
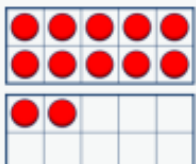
Addition

Year 2	- Recall and use addition facts to 20 fluently, and derive and use related facts up to 100 - Add numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s 2 two-digit numbers - adding 3 one-digit numbers - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
Progression of skills	Key representations		
Add ones to any number (related facts) Make links to known facts.	I know that ... and ... = ... so ... and ... = ... 	... more than ... is ... so ... more than ... is ... 	What do you notice? Can you continue the pattern? $5 + 2 = 7$ $15 + 2 = 17$ $25 + 2 = 27...$
Add three 1-digit numbers Prompt children to understand that addition can be done in any order and to make links to known facts.	... and ... are a bond to 10 $10 + ... = ...$ 	Double ... + ... = ... 	What do you notice? Which addition is the easiest to calculate? $8 + 9 + 1 =$ $8 + 1 + 9 =$ $9 + 1 + 8 =$

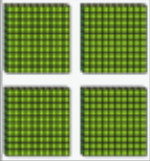
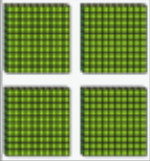
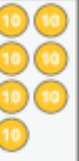
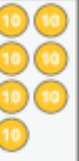
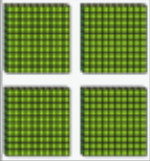
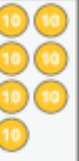
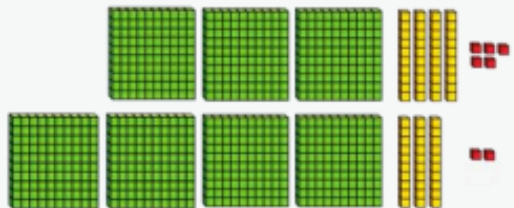
Addition

Progression of skills	Key representations		
Add across a 10 Partition the number being added to make a full ten.	... can be partitioned into ... and ...	I add ... to get to ... then I add ... $8 + 5 = 13$ $28 + 5 = 33$	
Add multiples of 10 Make links to known facts within ten.	... ones + ... ones = ... ones so ... tens + ... tens = ... tens $3 + 2 = 5$ $30 + 20 = 50$	What is the same? What is different?	
Add 10s to any number Make links to known facts.	... tens + ... tens = ... tens ... tens and ... ones = ...	To add ... I need to add 10 ... times.	I know that ... and ... = ... so ... and ... = ... $30 + 20 = 50$ $34 + 20 = 54$

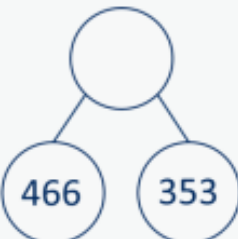
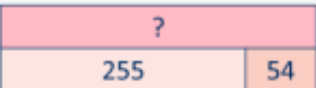
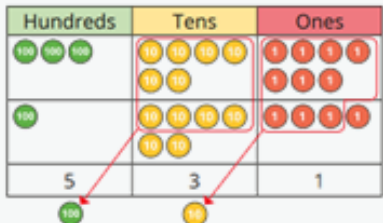
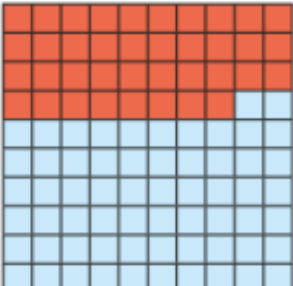
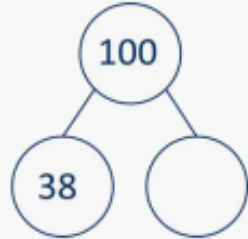
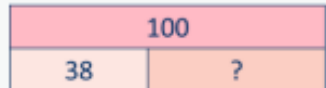
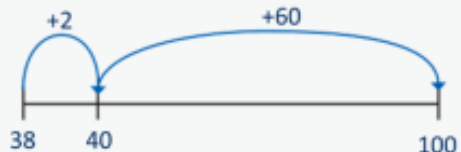
Addition

Progression of skills	Key representations		
Add 2-digit numbers (not across a ten) Lining up ones and tens in columns will support with later written methods.	... ones + ... ones = ... ones ... tens + ... tens = ... tens   3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64 		
Add 2-digit numbers (across a ten) Begin to exchange 10 ones for 1 ten.	There are ones, so I do/do not need to make an exchange. ... ones = ... ten and ... ones    5 ones + 7 ones = 12 ones 12 ones = 1 ten and 2 ones 4 tens + 3 tens + 1 ten = 8 tens 8 tens and 2 ones = 82		
Missing numbers Solve missing number problems and use the inverse to check.	How many more do you need to make ...?  $6 + \square = 10$ $10 - \square = 6$	If ... is a whole and ... is a part, then ... is the other part. $\square + 3 = 7$ $7 - 3 = \square$ 	... can be partitioned into ... and ... $10 + 8 = 12 + \square$  

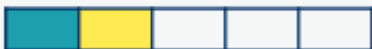
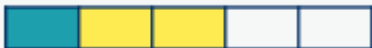
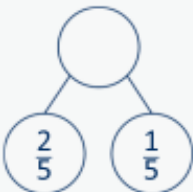
Addition

Year 3	- Add numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. - Add numbers with up to three digits, using formal written methods of columnar addition. - Add fractions with the same denominator within 1 whole. - Calculate the time taken by particular events or tasks.																															
Progression of skills	Key representations																															
Add 1s, 10s or 100s to a 3-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds column will increase by ... <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr></table> 444 + 5 = 444 + 50 = 444 + 500 =	Hundreds	Tens	Ones				<table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td></tr></table> 777 + 2 = 777 + 20 = 777 + 200 =	H	T	O				What patterns do you notice? 235 + 3 = 235 + 30 = 235 + 300 = 111 + = 118 604 + 20 = 111 + = 181 604 + 50 = 111 + = 811 604 + 90 = 111 +																	
Hundreds	Tens	Ones																														
																																
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Add two numbers (no exchange) Mental strategies and introduction of formal written method.	... ones + ... ones = ... ones ... tens + ... tens = ... tens ... hundreds + ... hundreds = ... hundreds  <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>3</td><td>4</td><td>5</td></tr><tr><td>+</td><td>4</td><td>3</td><td>2</td></tr><tr><td></td><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td><td></td></tr></table>			Hundreds	Tens	Ones								H	T	O		3	4	5	+	4	3	2								
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Addition

Progression of skills	Key representations	
Add two numbers across a 10 or 100 Formal written method involving up to 2 exchanges including 3-digit plus 2-digit numbers.	There are ... ones, so I do/do not need to make an exchange. There are ... tens, so I do/do not need to make an exchange. ... ones = ... ten and ... ones. ... tens = ... hundred and ... tens.        	
Complements to 100 Pairs of numbers which total 100	... plus ... is equal to 100   	I add ... to get to the next 10, then ... to get to 100  $38 + 62 = 100$ $62 + 38 = 100$ $100 = 38 + 62$ $100 = 62 + 38$

Addition

Progression of skills	Key representations
Add fractions with the same denominator within 1 whole Make links with known facts.	When adding fractions with the same denominator, I only add the numerator. ... fifths + ... fifths = ... fifths  $\frac{1}{5} + \frac{1}{5}$  $\frac{1}{5} + \frac{2}{5}$  $\frac{1}{5} + \frac{3}{5}$  

Progression of skills - Subtraction

Year group	Skill
Nursery	• Subitise to 3 • Count how many • Make numbers to 5 • Take 1 away (through songs and rhymes)
Reception	• Conceptually subitise to 5 • 1 less • Notice the composition of numbers within 10 • Partition • Take away
Year 1	• Find a part • Take away • Bonds within 10 • Related facts within 20 • Missing numbers

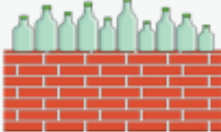
Progression of skills - Subtraction

Year group	Skill
Year 2	• Subtract 1s from any number (related facts) • Subtract across a 10 • Subtract multiples of 10 • Subtract 10s from any number • Subtract two 2-digit numbers (not across a ten) • Subtract two 2-digit numbers (across a ten) • Missing numbers
Year 3	• Subtract 1s, 10s and 100s from a 3-digit number • Subtract two numbers (no exchange) • Subtract two numbers across a 10 or 100 • Complements to 100 • Subtract fractions with the same denominator within 1 whole

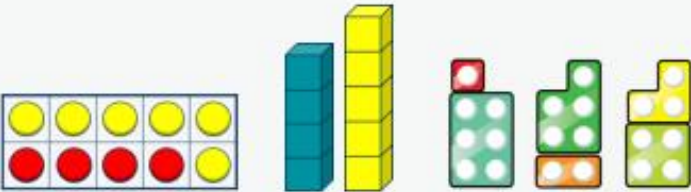
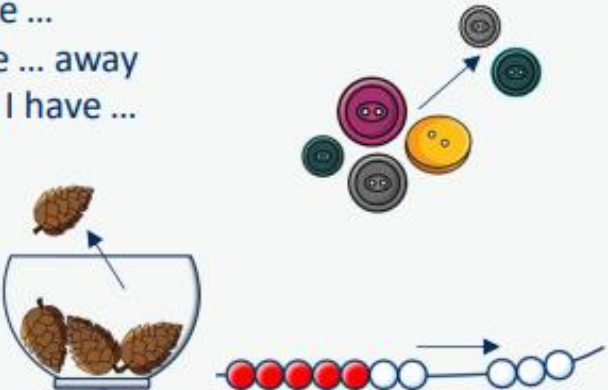
Subtraction

Nursery	- Begin to have an understanding of numbers to 5 - We recommend focusing on noticing and representing small quantities, perceptual subitising and counting.	
Progression of skills	Key representations	
Subitise to 3 Instantly see how many.	How many do you see?        	
Count how many Begin to count objects using 1-1 correspondence.	How many are there? 	Count out ... from a larger group. E.g. Collect a cup for everyone at the table. 
Make numbers to 5 Start by showing 1, 2 and 3 using fingers.	Show me...  	Begin to link numerals to quantities.  
Take 1 away Through stories, songs and rhymes.	How many do we have now?  	

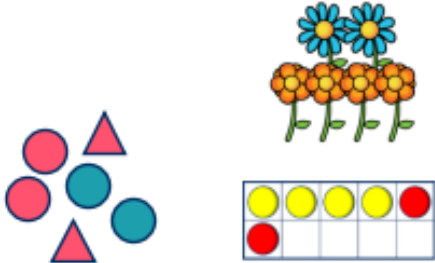
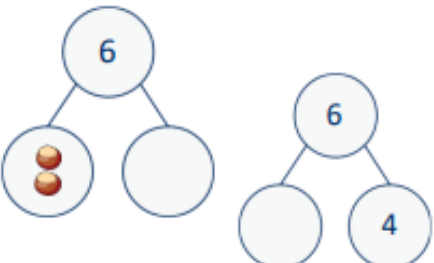
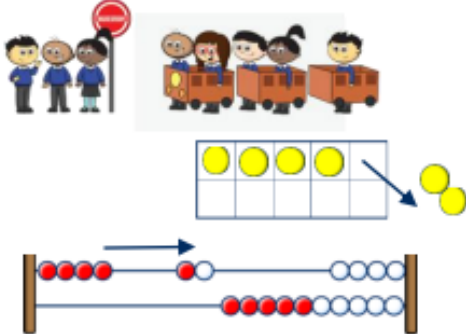
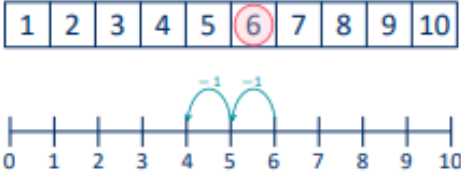
Subtraction

Reception	- Have a deep understanding of number to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5 - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 (and some subtraction facts) and some number bonds to 10, including double facts.
Progression of skills	Key representations
Conceptually subitise to 5 Notice the parts that make up the whole.	What do you see? How do you see it?     
1 less Continue to link to stories, songs and rhymes.	1 less than ... is ...    
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	How many...? How many...? How many altogether?    How many ways can you make...?   

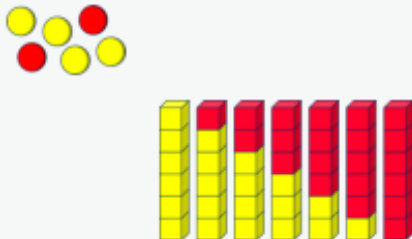
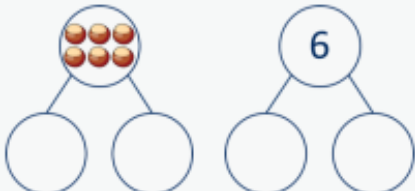
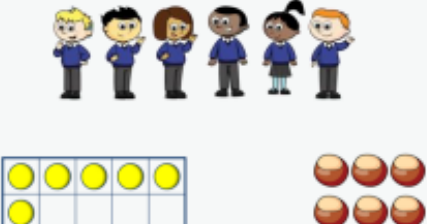
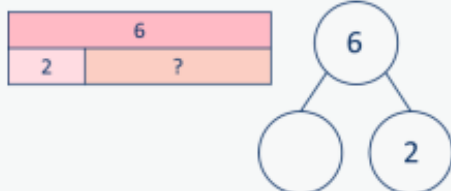
Subtraction

Progression of skills	Key representations	
Partition Using objects, explore different ways to partition a number into 2 or more parts.	There are ... altogether. I can see ... here and ... there. 	... and ... make ... 
Take away A quantity is reduced.	First... Then... Now... 	I have ... I take ... away Now I have ... 

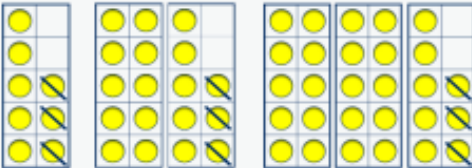
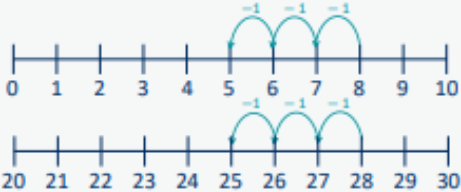
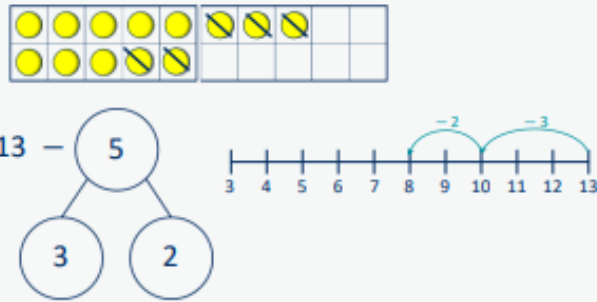
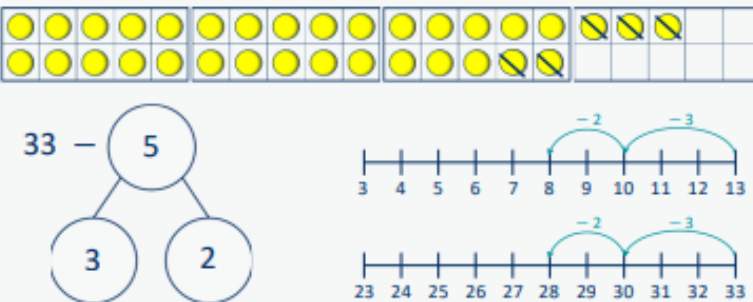
Subtraction

Year 1	- Read, write and interpret mathematical statements involving subtraction (–) and equals (=) signs. - Represent and use number bonds and related subtraction facts within 20 - Subtract one-digit and two-digit numbers to 20, including zero. - Solve one-step problems that involve subtraction, using concrete objects and pictorial representations, and missing number problems such as $7 = \square - 9$		
Progression of skills	Key representations		
Find a part Link to number bonds and known facts. E.g. $2 + 4 = 6$ so if 6 is the whole and 4 is a part, the other part must be 2	There are ... in total. ... are ... How many are not ...? 	... is the whole. ... is a part. ... is a part. 	... subtract ... is equal to is equal to ... – ... $6 - 2 = 4$ $6 - 4 = 2$ $4 = 6 - 2$ $2 = 6 - 4$
Take away A quantity is decreased.	First... Then... Now... 	I start at ... I jump back ... I land on ... 	... minus ... is equal to is equal to ... – ... $6 - 2 = 4$ $6 - 4 = 2$ $4 = 6 - 2$ $2 = 6 - 4$

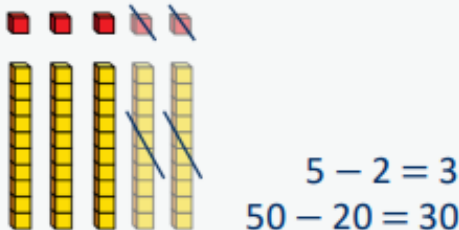
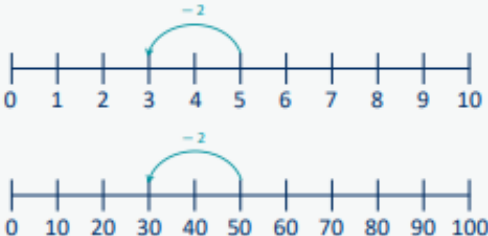
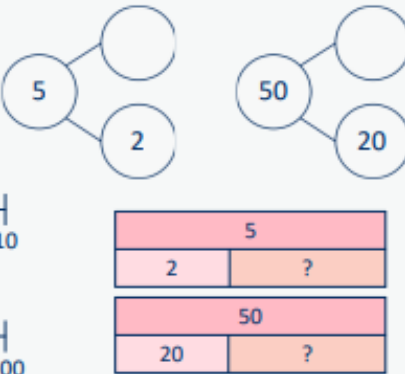
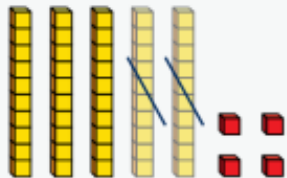
Subtraction

Progression of skills	Key representations		
Bonds within 10 Focus on subtraction facts. Encourage children to notice patterns.	... is made of ... and and ... make ... 	... can be partitioned into ... and ... 	... minus ... is equal to ... $6 - 0 = 6$ $6 - 1 = 5$ $6 - 2 = 4$ $6 - 3 = 3$ $6 - 4 = 2$ $6 - 5 = 1$ $6 - 6 = 0$
Related facts within 20 Make links to known facts.	I know that ... minus ... = ... so ... minus ... = ... 	... less than ... is ... so ... less than ... is ... 	What patterns do you notice? $8 - 3 = 5$ $18 - 3 = 15$ $5 = 8 - 3$ $15 = 18 - 3$
Missing numbers Make links to known facts.	How many do you need to subtract to make ...? 	If ... is the whole and ... is a part, the other part must be... 	... minus ... is equal to ... $6 - \square = 2$ $2 = 6 - \square$ 

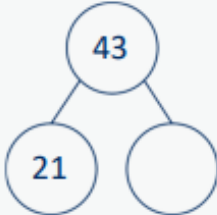
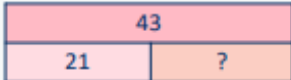
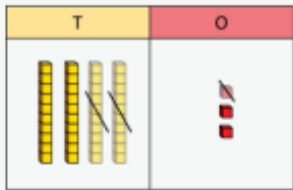
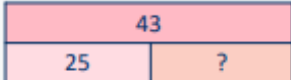
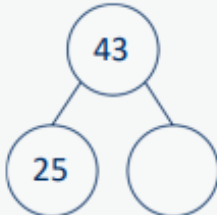
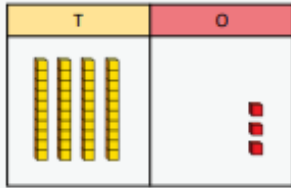
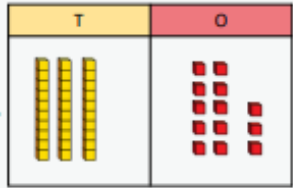
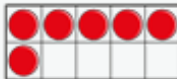
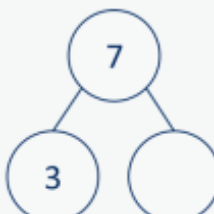
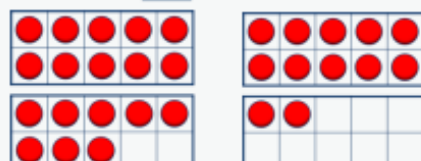
Subtraction

Year 2	- Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100 - Subtract numbers using concrete objects, pictorial representations, and mentally, including: - a two-digit number and 1s - a two-digit number and 10s 2 two-digit numbers - Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.		
Progression of skills	Key representations		
Subtract ones from any number (related facts) Make links to known facts.	I know that ... minus ... = ... so ... minus ... = ... 	... less than ... is ... so ... less than ... is ... 	What do you notice? Can you continue the pattern? $8 - 3 = 5$ $18 - 3 = 15$ $28 - 3 = 25...$
Subtract across a 10 Partition the number being subtracted to bridge through a ten.	... can be partitioned into ... and ... 	Make links with related facts. 	

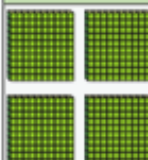
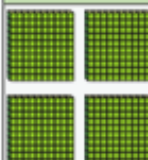
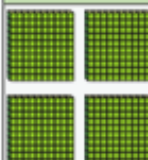
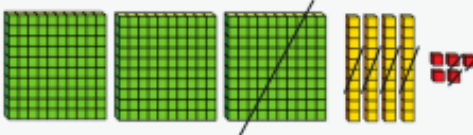
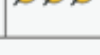
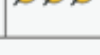
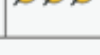
Subtraction

Progression of skills	Key representations																																																														
Subtract multiples of 10 Make links to known facts within ten.	... ones — ... ones = ... ones so ... tens — ... tens = ... tens  $5 - 2 = 3$ $50 - 20 = 30$	What is the same? What is different?  																																																													
Subtract 10s from any number Make links to known facts.	... tens — ... tens = ... tens ... tens and ... ones = ... 	To subtract ... I need to subtract 10 ... times. <table border="1" data-bbox="1151 944 1565 1187"><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></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	I know that ... minus ... = ... so ... minus ... = ... $50 - 20 = 30$ $54 - 20 = 34$
1	2	3	4	5	6	7	8	9	10																																																						
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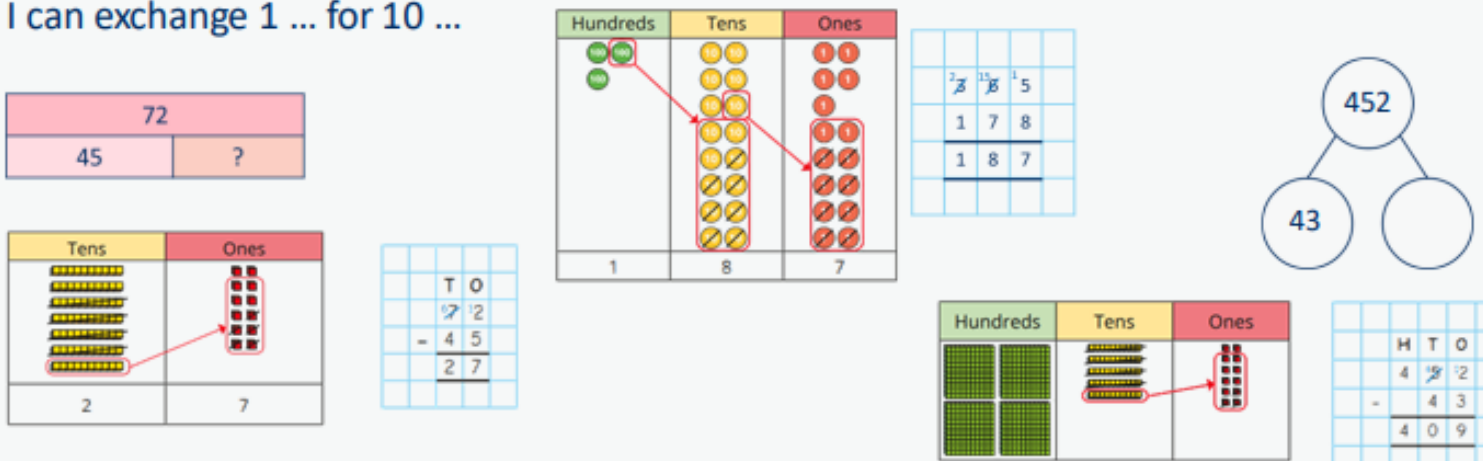
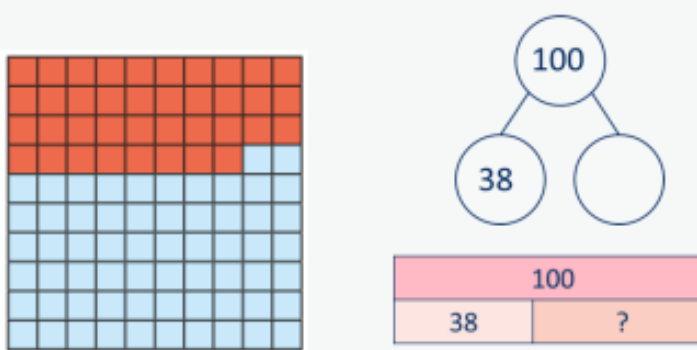
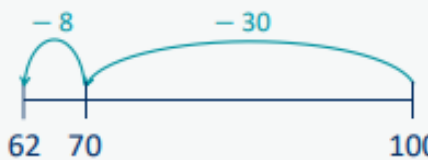
Subtraction

Progression of skills	Key representations		
Subtract two 2-digit numbers (not across a ten)	... ones – ... ones = ... ones ... tens – ... tens = ... tens  	 3 ones – 1 one = 2 ones 4 tens – 2 tens = 2 tens 2 tens and 2 ones = 22	
Subtract two 2-digit numbers (across a ten) Begin to exchange 1 ten for 10 ones.	I need to make an exchange because I do not have enough ones to subtract ... ones.  	   3 ones – 5 ones (I need to exchange 1 ten for 10 ones) 13 ones – 5 ones = 8 ones 3 tens – 2 tens = 1 ten 1 ten and 8 ones = 18	
Missing numbers Solve missing number problems and use the inverse to check.	How many do you need to subtract to make ...?  $10 - \square = 6$ $6 + \square = 10$	If ... is a whole and ... is a part, then ... is the other part. $7 - 3 = \square$ $\square + 3 = 7$ 	... can be partitioned into ... and ... $18 - \square = 12 + 2$ 

Subtraction

Year 3	- Subtract numbers mentally, including: a three-digit number and ones, a three-digit number and tens, a three-digit number and hundreds. - Subtract numbers with up to three digits, using formal written methods. - Subtract fractions with the same denominator within 1 whole.																													
Progression of skills	Key representations																													
Subtract 1s, 10s and 100s from a 3-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds column will decrease by ... <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr></table> $444 - 2 =$ $444 - 20 =$ $444 - 200 =$ <table><tr><th>H</th><th>T</th><th>O</th></tr><tr><td></td><td></td><td></td></tr></table> $777 - 4 =$ $777 - 40 =$ $777 - 400 =$ What patterns do you notice? $235 - 3 =$ $235 - 30 =$ $235 - 300 =$ $118 - \square = 111$ $624 - 20 =$ $181 - \square = 111$ $654 - 50 =$ $811 - \square = 111$ $694 - 90 =$	Hundreds	Tens	Ones				H	T	O																				
Hundreds	Tens	Ones																												
																														
H	T	O																												
																														
Subtract two numbers (no exchange) Mental strategies and introduction of formal written method.	... ones – ... ones = ... ones ... tens – ... tens = ... tens ... hundreds – ... hundreds = ... hundreds  345 143 <table><tr><th>Hundreds</th><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td><td></td></tr><tr><td></td><td></td><td></td></tr></table> <table><tr><td colspan="2">769</td></tr><tr><td>147</td><td>?</td></tr></table> <table><tr><td></td><td>H</td><td>T</td><td>O</td></tr><tr><td></td><td>7</td><td>6</td><td>9</td></tr><tr><td>-</td><td>1</td><td>4</td><td>7</td></tr><tr><td></td><td></td><td></td><td></td></tr></table>	Hundreds	Tens	Ones							769		147	?		H	T	O		7	6	9	-	1	4	7				
Hundreds	Tens	Ones																												
																														
																														
769																														
147	?																													
	H	T	O																											
	7	6	9																											
-	1	4	7																											

Subtraction

Progression of skills	Key representations	
Subtract two numbers across a 10 or 100 Formal written method involving up to 2 exchanges including 3-digit subtract 2-digit numbers.	I need to subtract ... ones. I do/do not need to make an exchange. I need to subtract ... tens. I do/do not need to make an exchange. I can exchange 1 ... for 10 ... 	
Complements to 100 Focus on subtraction facts. Encourage children to notice patterns.	100 minus ... is equal to ... 	I subtract ... tens, then I subtract ... ones. $100 - 38 = 62$ $100 - 62 = 38$ $62 = 100 - 38$ $38 = 100 - 62$ 

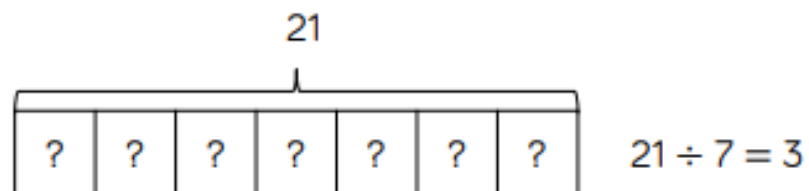
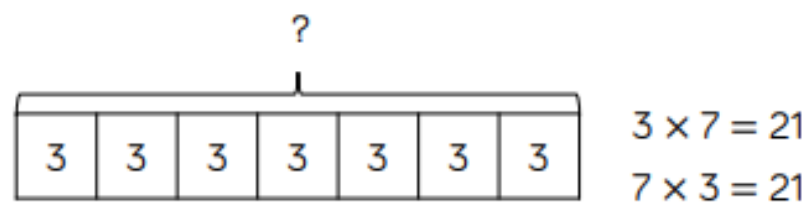
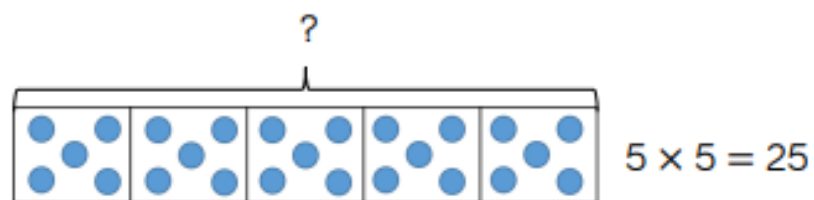
Subtraction

Progression of skills	Key representations
Subtract fractions with the same denominator within 1 whole Make links with known facts.	When subtracting fractions with the same denominator, I only subtract the numerator. ... fifths – ... fifths = ... fifths $\frac{5}{5} - \frac{1}{5}$ $\frac{4}{5} - \frac{1}{5}$ $\frac{3}{5} - \frac{1}{5}$

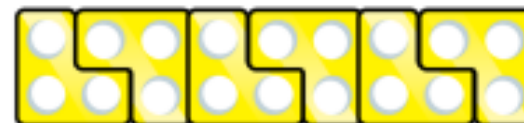
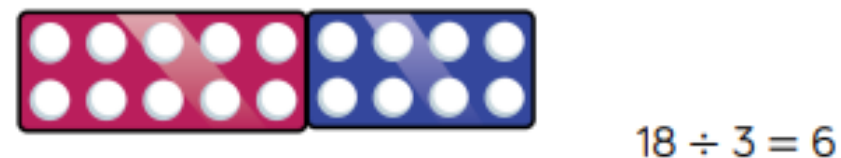
Calculation Policy

Multiplication and Division

Bar Model



Number Shapes



Bead Strings



$$5 \times 3 = 15$$

$$3 \times 5 = 15$$

$$15 \div 3 = 5$$



$$5 \times 3 = 15$$

$$3 \times 5 = 15$$

$$15 \div 5 = 3$$



$$4 \times 5 = 20$$

$$5 \times 4 = 20$$

$$20 \div 4 = 5$$

Number Tracks



$$6 \times 3 = 18$$

$$3 \times 6 = 18$$



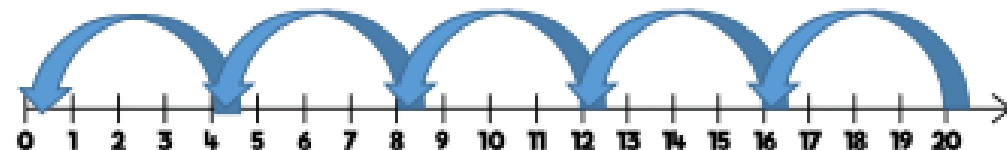
$$18 \div 3 = 6$$

Number Lines (labelled)



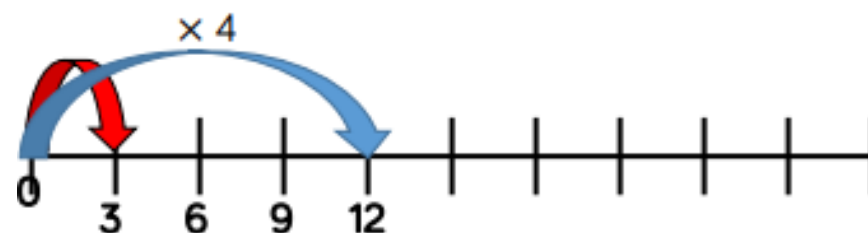
$$4 \times 5 = 20$$

$$5 \times 4 = 20$$



$$20 \div 4 = 5$$

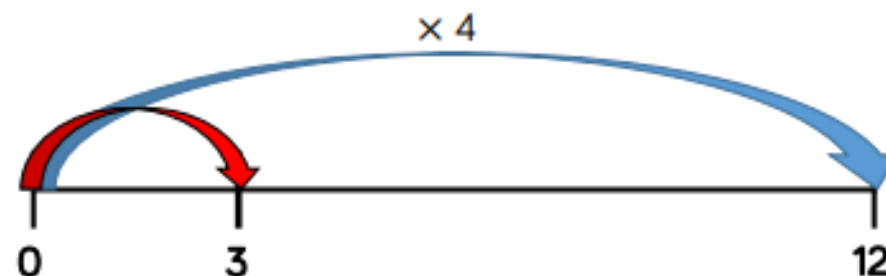
Number Lines (blank)



A red car travels 3 miles.

A blue car 4 times further.

How far does the blue car travel?



A blue car travels 12 miles.

A red car 4 times less.

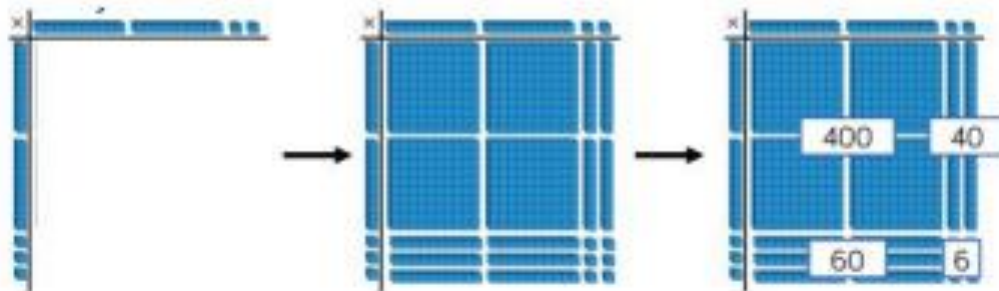
How far does the red car travel?

Base 10/Dienes (multiplication)

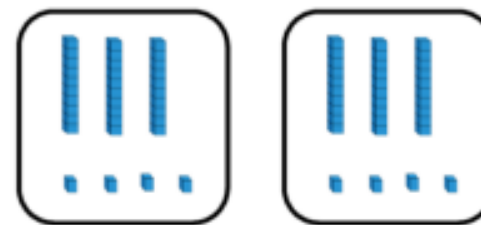
Hundreds	Tens	Ones
		●●●●
		●●●●
		●●●●

(A green box highlights the 12 ones, and a green arrow points to a single ten rod below the Tens column.)

$$\begin{array}{r} 24 \\ \times 3 \\ \hline 72 \\ \hline 1 \end{array}$$



Base 10/Dienes (division)



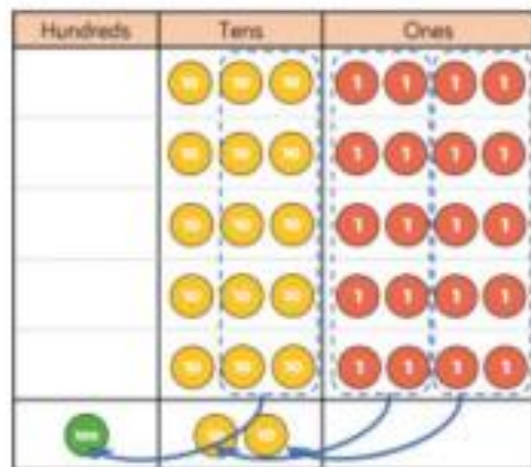
$$68 \div 2 = 34$$



Tens	Ones
	●●●●
	●●●●
	●●●●

$$72 \div 3 = 24$$

Place Value Counters (multiplication)



$$\begin{array}{r}
 34 \\
 \times 5 \\
 \hline
 170 \\
 \hline
 12
 \end{array}$$



$$\begin{array}{r}
 44 \\
 \times 32 \\
 \hline
 8 \\
 80 \\
 120 \\
 + 1200 \\
 \hline
 1408 \\
 \hline
 1
 \end{array}$$

Progression of skills - Multiplication

Year group	Skill
Nursery	Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)
Reception	- Double to 10 - Make equal groups
Year 1	- Count in 2s, 5s and 10s - Add equal groups - Make arrays - Make doubles

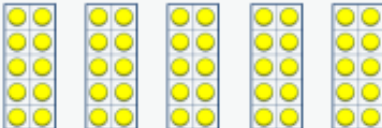
Progression of skills - Multiplication

Year group	Skill
Year 2	• Link repeated addition and multiplication • Use arrays • Double • The 2 times-table • The 10 times-table • The 5 times-table • Missing numbers
Year 3	• The 3 times-table • The 4 times-table • The 8 times-table • Related facts • Multiply a 2-digit number by a 1-digit number - no exchange • Multiply a 2-digit number by a 1-digit number - with exchange • Scaling • Correspondence problems

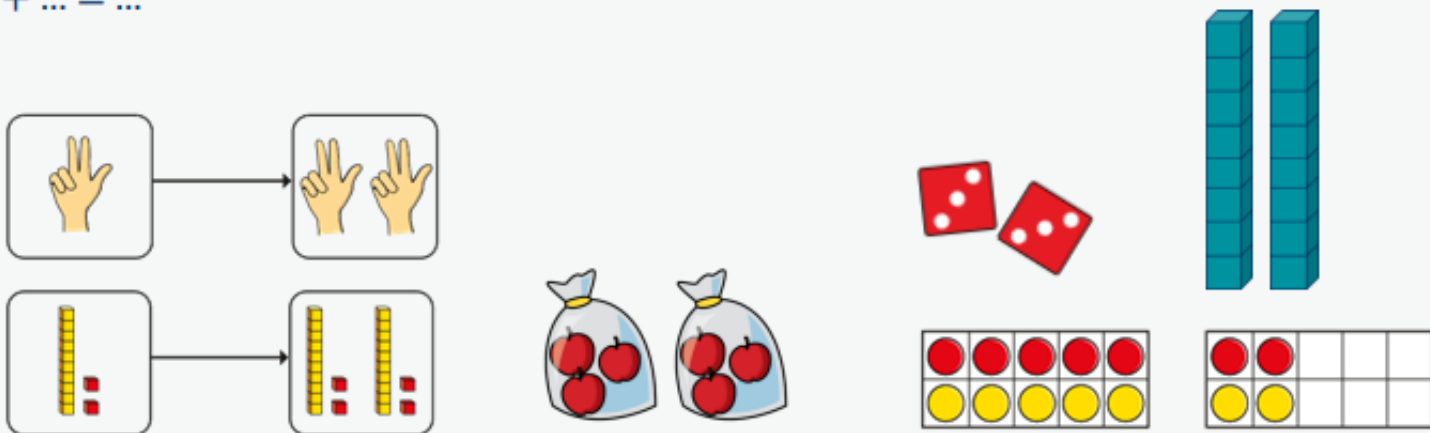
Multiplication

Reception	- Have a deep understanding of number to 10, including the composition of each number. - Subitise (recognise quantities without counting) up to 5 - Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. - Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
Progression of skills	Key representations
Double to 10 Prompt children to notice that double means twice as many and to notice that there are two equal groups.	Double ... is is double ...
Make equal groups Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are ... groups of ... There are ... altogether.

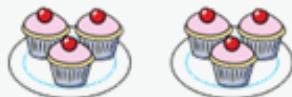
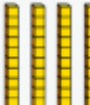
Multiplication

Year 1	- Count in multiples of twos, fives and tens. - Solve one-step problems involving multiplication, using concrete objects, pictorial representations and arrays with the support of the teacher.																																																												
Progression of skills	Key representations																																																												
Count in 2s, 5s and 10s Begin by counting objects that naturally come in 2s, 5s and 10s, for example pairs of socks or fingers.	There are ... equal groups of ... There are ... altogether.   	Continue to colour in ...s What do you notice? <table border="1"><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	Complete the number track/number line by counting in ...s. <table border="1"><tr><td>5</td><td>10</td><td>15</td><td>20</td><td></td><td></td><td></td><td></td></tr></table> 	5	10	15	20				
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Add equal groups (repeated addition) Children should be able to write a repeated addition to represent equal groups and to draw pictures or use objects to represent a repeated addition.	There are ... groups of ... There are ... altogether.  $10 + 10 + 10 = 30$  $5 + 5 + 5 + 5 = 20$		What is the same? What is different? $2 + 2 + 2 =$ $5 + 5 + 5 =$ $10 + 10 + 10 =$ Use objects or a drawing to represent the equal groups and find how many in total.																																																										

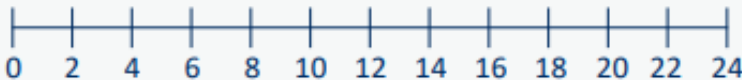
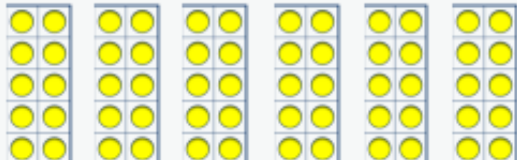
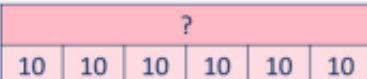
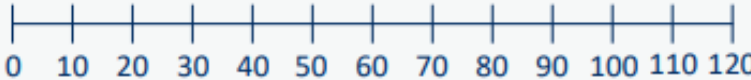
Multiplication

Progression of skills	Key representations
Make arrays Children use their knowledge of adding equal groups to arrange objects in columns and rows.	There are ... rows of ... There are ... altogether. There are ... columns of ... There are ... altogether. 
Make doubles Children understand that doubles are two equal groups. Children may begin to explore doubles beyond 20 using base 10	Double ... is ... $\dots + \dots = \dots$ 

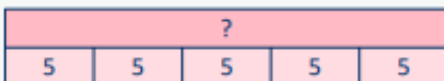
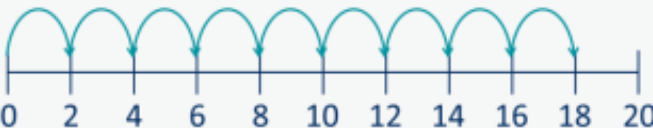
Multiplication

Year 2	- Recall and use multiplication facts for the 2, 5 and 10 multiplication tables. - Calculate mathematical statements for multiplication within the multiplication tables and write them using the multiplication (×) and equals (=) signs. - Show that multiplication of two numbers can be done in any order (commutative).													
Progression of skills	Key representations													
Link repeated addition and multiplication Encourage children to make the link between repeated addition and multiplication.	There are ... equal groups with ... in each group. There are ... altogether.  <table border="1" data-bbox="1485 655 1704 746"><tr><td colspan="2">6</td></tr><tr><td>3</td><td>3</td></tr></table> $3 + 3 = 6$ $2 \times 3 = 6$  <table border="1" data-bbox="1377 826 1704 914"><tr><td colspan="4">20</td></tr><tr><td>5</td><td>5</td><td>5</td><td>5</td></tr></table> $5 + 5 + 5 + 5 = 20$ $4 \times 5 = 20$		6		3	3	20				5	5	5	5
6														
3	3													
20														
5	5	5	5											
Use arrays Encourage children to see that multiplication is commutative.	There are ... rows with ... in each row. There are ... columns with ... in each column.  $3 \text{ lots of } 5 = 15$ $5 + 5 + 5 = 15$ $5 \text{ lots of } 3 = 15$ $3 + 3 + 3 + 3 + 3 = 15$	I can see ... × ... and ... × ... $3 \times 5 = 15$ $5 \times 3 = 15$ $3 \times 5 = 5 \times 3$												
Double Encourage children to make links with related facts.	Double ... is ...  →  $\text{Double } 4 = 4 + 4$ $\text{Double } 4 \text{ is } 8$	Double ... is ... so double ... is ...  →  $\text{Double } 4 \text{ is } 8$  →  $\text{Double } 40 \text{ is } 80$												

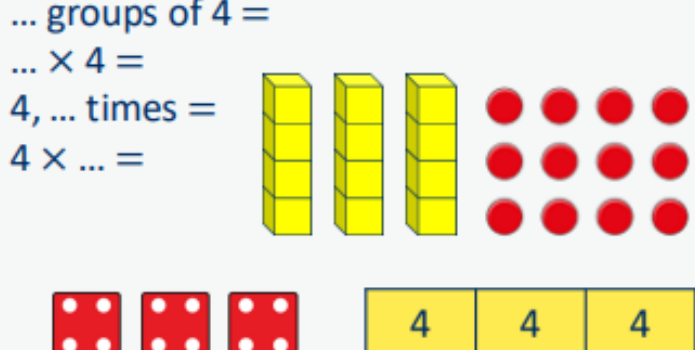
Multiplication

Progression of skills	Key representations																																									
The 2 times-table Encourage daily counting in multiples both forwards and back. Notice that all multiples of 2 are even numbers.	... lots of 2 = ... $\times 2 =$ 	... times 2 is equal to ... <table border="1"><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></table> $1 \times 2 = 2$ $2 = 1 \times 2$ $2 \times 2 = 4$ $4 = 2 \times 2$ $3 \times 2 = 6$ $6 = 3 \times 2$ 	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										
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21	22	23	24	25	26	27	28	29	30																																	
The 10 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.	... lots of 10 = ... $\times 10 =$ 	... times 10 is equal to ... <table border="1"><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></table> $1 \times 10 = 10$ $10 = 1 \times 10$ $2 \times 10 = 20$ $20 = 2 \times 10$ $3 \times 10 = 30$ $30 = 3 \times 10$ 	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
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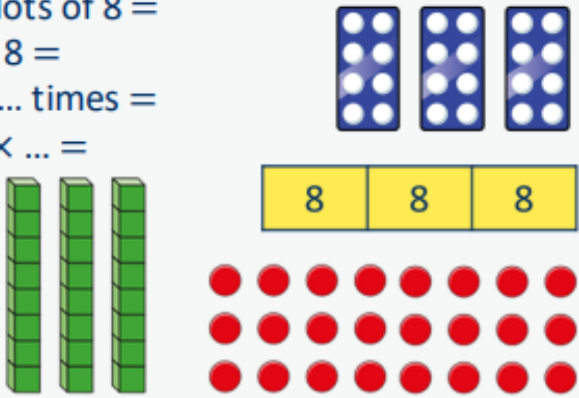
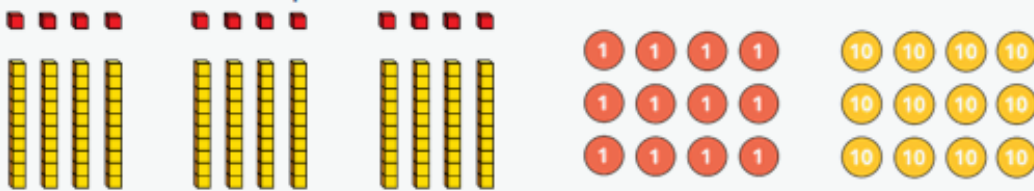
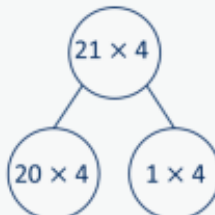
Multiplication

Progression of skills	Key representations																																									
The 5 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.	... lots of 5 = ... $\times 5 =$    	... times 5 is equal to ... <table border="1" data-bbox="1498 475 1957 652"><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></table> $1 \times 5 = 5$ $5 = 1 \times 5$ $2 \times 5 = 10$ $10 = 2 \times 5$ $3 \times 5 = 15$ $15 = 3 \times 5$ 	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
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31	32	33	34	35	36	37	38	39	40																																	
Missing numbers Make links to known facts.	... is equal to ... groups of ... 18 socks, how many pairs?  	... times ... is equal to ... $\square \times 2 = 18$ $18 = 2 \times \square$																																								

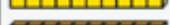
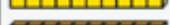
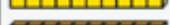
Multiplication

Year 3	- Recall and use multiplication facts for the 3, 4 and 8 multiplication tables. - Write and calculate mathematical statements for multiplication using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. - Solve problems, including missing number problems, involving multiplication, including positive integer scaling problems and correspondence problems in which n objects are connected to m objects.																															
Progression of skills	Key representations																															
The 3 times-table Encourage daily counting in multiples both forwards and back.	... groups of 3 = ... $\times 3$ = 3, ... times = $3 \times \dots$ = 	... times 3 is equal to ... <table border="1" data-bbox="1471 782 2000 935"><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></table> $4 \times 3 = 12$ $12 = 4 \times 3$ 	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
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21	22	23	24	25	26	27	28	29	30																							
The 4 times-table Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2 and 4 times-tables.	... groups of 4 = ... $\times 4$ = 4, ... times = $4 \times \dots$ = 	... times 4 is equal to ... <table border="1" data-bbox="1471 1182 2000 1334"><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></table> $3 \times 4 = 12$ $12 = 3 \times 4$ 	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
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Multiplication

Progression of skills	Key representations																															
The 8 times-table Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2, 4 and 8 times-tables.	... lots of 8 = $\times 8 =$ 8, ... times = $8 \times \dots =$ 	... times 8 is equal to ... <table border="1"><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></table> $3 \times 8 = 24$ $24 = 3 \times 8$ 	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
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11	12	13	14	15	16	17	18	19	20																							
21	22	23	24	25	26	27	28	29	30																							
Related facts Use knowledge of multiplying by 10 to scale times-table facts.	... $\times$... ones is equal to ... ones so ... $\times$... tens is equal to ... tens.  $3 \times 4 = 12$ $3 \times 40 = 120$																															
Multiply a 2-digit number by a 1-digit number - no exchange Children apply their understanding of partitioning to represent and solve calculations using the expanded method.	... tens multiplied by ... is equal to ... tens. ...ones multiplied by ... is equal to ... ones. <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> $30 \times 2 = 60$ $2 \times 2 = 4$ $32 \times 2 = 64$  <table border="1"><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table>		Tens	Ones					Tens	Ones																						
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Multiplication

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Multiply a 2-digit number by a 1-digit number - with exchange Children apply their understanding of partitioning to represent and solve calculations using the expanded method.	... tens multiplied by ... is equal to ... tens. ... ones multiplied by ... is equal to ... ones. <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table> $20 \times 4 = 80$ $4 \times 4 = 16$ $24 \times 4 = 96$	Tens	Ones													45 × 3 40 × 3 5 × 3 <table><thead><tr><th>Tens</th><th>Ones</th></tr></thead><tbody><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></tbody></table>	Tens	Ones								
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Scaling Children focus on multiplication as scaling (... times the size) as opposed to repeated addition.	There are times as many ... as ...   <table><tr><td>2</td></tr><tr><td>2</td><td>2</td><td>2</td></tr></table> There are 3 times as many triangles as circles.	2	2	2	2	... is ... times the size of is ... times the length/height of ...  4 cm  16 cm  Miss Smith is twice the height of Jo.																				
2																										
2	2	2																								

Multiplication

Progression of skills	Key representations								
Correspondence problems (How many ways?) Encourage children to work systematically to find all the different possible combinations.	For every ... , there are ... possible ... There are ... $\times$... possibilities altogether.  <table border="1" data-bbox="1061 507 1373 879"> <thead> <tr> <th>hats</th><th>scarves</th></tr> </thead> <tbody> <tr> <td>blue </td><td> </td></tr> <tr> <td>orange </td><td> </td></tr> <tr> <td>purple </td><td> </td></tr> </tbody> </table> For every hat, there are two possible scarves. $3 \times 2 = 6$ There are 6 possibilities altogether.	hats	scarves	blue 	 	orange 	 	purple 	 
hats	scarves								
blue 	 								
orange 	 								
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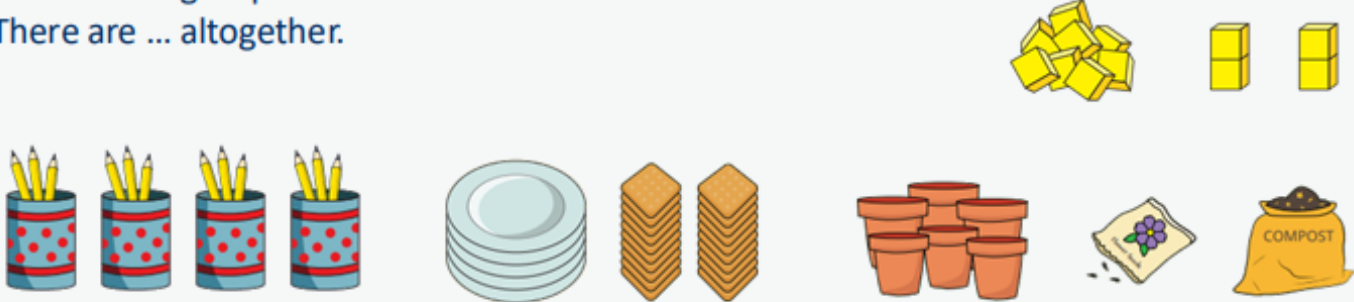
Progression of skills - Division

Year group	Skill
Nursery	Continue with counting and subitising skills as a foundation for later work on equal groups. (see addition and subtraction sections)
Reception	- Sharing - Grouping
Year 1	- Make equal groups – grouping - Make equal groups – sharing - Find a half - Find a quarter

Progression of skills - Division

Year group	Skill
Year 2	• Divide by 2 • Divide by 10 • Divide by 5 • Missing numbers • Unit fractions • Non-unit fractions
Year 3	• Divide by 3 • Divide by 4 • Divide by 8 • Related facts • Divide a 2-digit number by a 1-digit number - no exchange • Divide a 2-digit number by a 1-digit number - with remainders • Unit fractions of a set of objects • Non-unit fractions of a set of objects

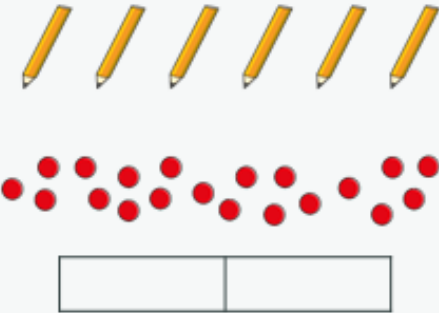
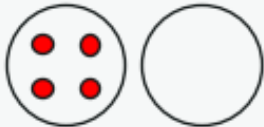
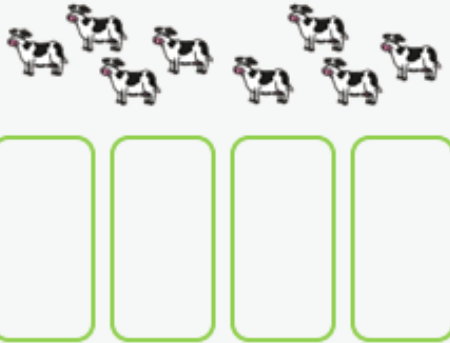
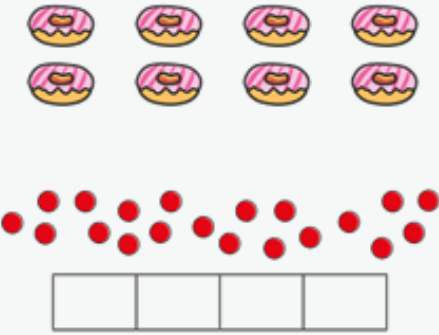
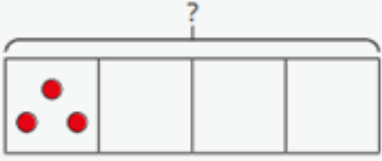
Division

Reception	• Have a deep understanding of number to 10, including the composition of each number. • Subitise (recognise quantities without counting) up to 5 • Automatically recall (without reference to rhymes, counting or other aids) number bonds up to 5 and some number bonds to 10, including double facts. • Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.
Progression of skills	Key representations
Sharing Provide practical activities such as sharing items during snack time. Encourage children to check whether items have been shared fairly (equally).	There are ... altogether. They are shared equally between ... groups. 
Grouping Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are ... groups of ... There are ... altogether. 

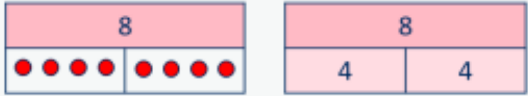
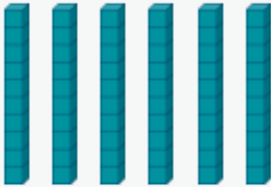
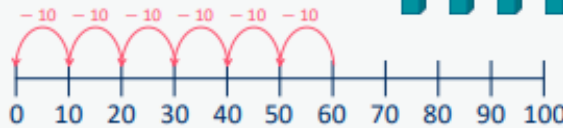
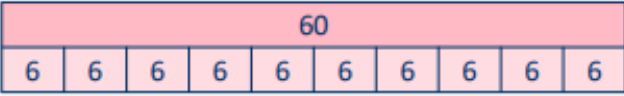
Division

Year 1	- Solve simple one-step problems involving division, using concrete objects, pictorial representations and arrays with the support of the teacher. - Recognise, find and name a half as one of two equal parts of a quantity. - Recognise, find and name a quarter as one of four equal parts of an object, shape or quantity.		
Progression of skills	Key representations		
Make equal groups - grouping Encourage children to physically move objects into equal groups. They can also circle equal groups when using pictures.	There are ... altogether. How many groups of ... can you make?  	Circle groups of 2 There are ... groups of 2 	Take ... cubes. Make equal groups.  There are ... groups of ...
Make equal groups – sharing Encourage children to check that the objects have been shared fairly and each group is the same.	... have been shared equally between... There are ... on/in each ...    	Take ... cubes. Share them between ...  12 shared between ... is ...	

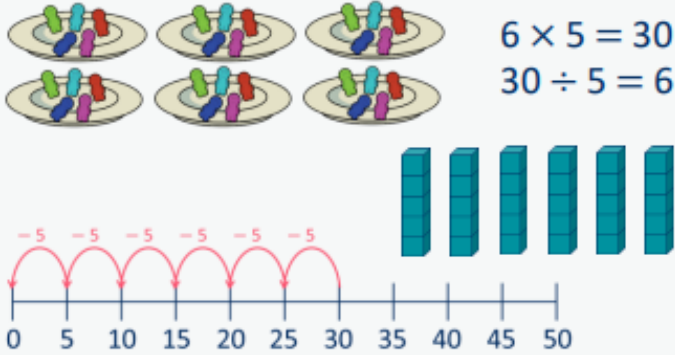
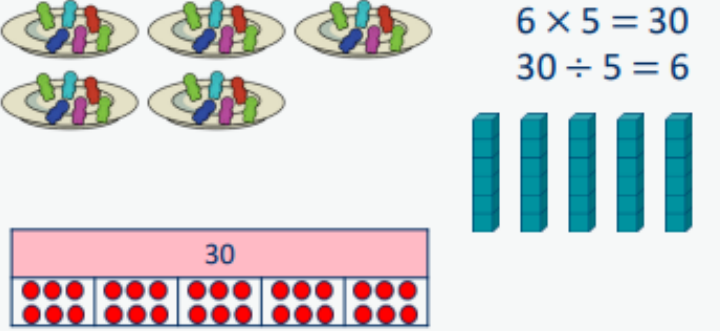
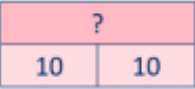
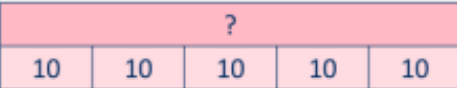
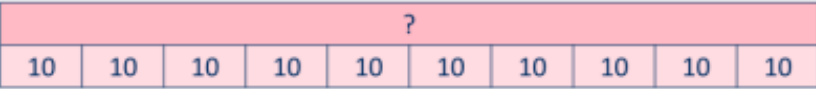
Division

Progression of skills	Key representations		
Find a half Start with practical opportunities to share a quantity into 2 groups. Progress to circling half of the objects in a picture and then to finding the whole from a given half.	To find half, I need to share into 2 equal groups.  There are ... in each group.	Half of ... is ... 	If ... is half, what is the whole?  4 is half of ...
Find a quarter Start with practical opportunities to share a quantity into 4 groups. Progress to using pictures or bar models to find a quarter and then to finding the whole from a given quarter.	To find a quarter, I need to share into 4 equal groups.  There are ... in each group.	A quarter of ... is ... 	If ... is one quarter, what is the whole?  3 is one quarter of ...

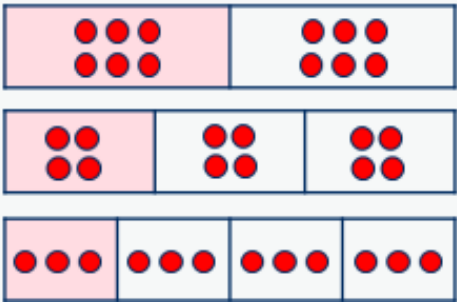
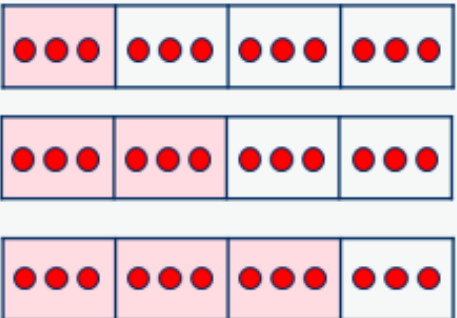
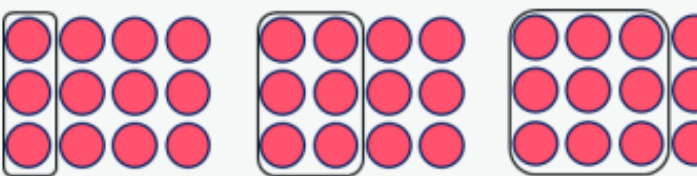
Division

Year 2	- Recall and use division facts for the 2, 5 and 10 multiplication tables. - Calculate mathematical statements for division within the multiplication tables and write them using the division ($\div$) and equals ($=$) signs. - Recognise, find, name and write fractions $\frac{1}{3}$, $\frac{1}{4}$, $\frac{2}{4}$ and $\frac{3}{4}$ of a quantity.	
Progression of skills	Key representations	
Divide by 2 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts and halving.	There are ... equal groups of 2 ... $\div 2 = \dots$  $4 \times 2 = 8$ $8 \div 2 = 4$  	... shared equally between 2 is ... Half of ... is $\div 2 = \dots$  $4 \times 2 = 8$ $8 \div 2 = 4$  
Divide by 10 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... equal groups of 10 ... $\div 10 = \dots$ $6 \times 10 = 60$ $60 \div 10 = 6$  	... shared equally between 10 is $\div 10 = \dots$ $6 \times 10 = 60$ $60 \div 10 = 6$  

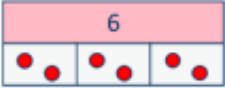
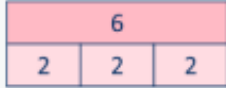
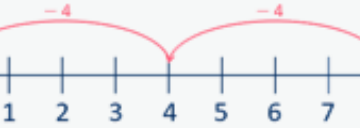
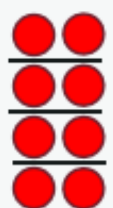
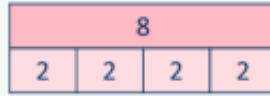
Division

Progression of skills	Key representations	
Divide by 5 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... equal groups of 5 $\dots \div 5 = \dots$  $6 \times 5 = 30$ $30 \div 5 = 6$	... shared equally between 5 is ... $\dots \div 5 = \dots$  $6 \times 5 = 30$ $30 \div 5 = 6$
Missing numbers Bar models are useful to show the link between multiplication and division.	... divided by 2/5/10 is equal to ...  $\square \div 2 = 10$  $\square \div 5 = 10$  $\square \div 10 = 10$	

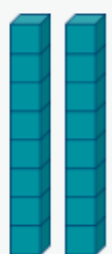
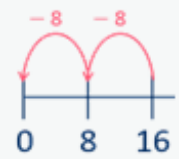
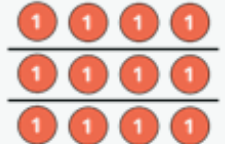
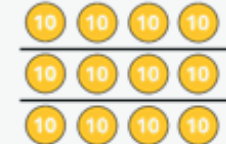
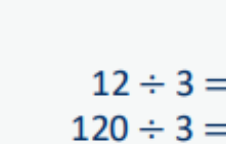
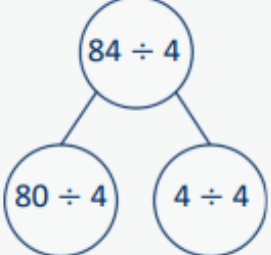
Division

Progression of skills	Key representations	
Unit fractions In Y2 the focus is on finding $\frac{1}{2}$, $\frac{1}{4}$ and $\frac{1}{3}$ Bar models are useful to show the link between division and finding a fraction.	The objects have been shared fairly into ... groups. $\frac{1}{\square}$ of ... is ... 	There are ... equal parts. There is ... part circled. $\frac{1}{\square}$ is circled. 
Non-unit fractions In Y2 the focus is on finding $\frac{2}{4}$ and $\frac{3}{4}$ Prompt children to notice that $\frac{2}{4}$ is equivalent to $\frac{1}{2}$	The objects have been shared fairly into ... groups. $\frac{\square}{\square}$ of ... is ... 	There are ... equal parts. There are ... parts circled. $\frac{\square}{\square}$ is circled. 

Division

Year 3	- Recall and use division facts for the 3, 4 and 8 multiplication tables. - Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods. - Recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators.	
Progression of skills	Key representations	
Divide by 3 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of 3 in $\div 3 =$  $2 \times 3 = 6$ $6 \div 3 = 2$  	... has been shared equally into 3 equal groups. ... $\div 3 =$  $2 \times 3 = 6$ $6 \div 3 = 2$   
Divide by 4 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of 4 in $\div 4 =$  $2 \times 4 = 8$ $8 \div 4 = 2$  	... has been shared equally into 4 equal groups. ... $\div 4 =$  $2 \times 4 = 8$ $8 \div 4 = 2$   

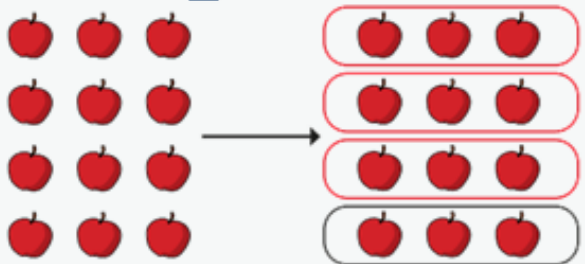
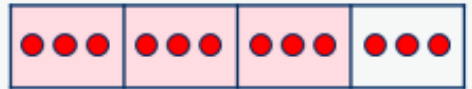
Division

Progression of skills	Key representations																	
Divide by 8 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	There are ... groups of 8 in ... $\dots \div 8 =$  $2 \times 8 = 16$ $16 \div 8 = 2$  	... has been shared equally into 8 equal groups. $\dots \div 8 =$    $2 \times 8 = 16$ $16 \div 8 = 2$																
Related facts Link to known times-table facts.	... $\div$... is equal to ..., so ... tens $\div$... is equal to ... tens.       $12 \div 3 = 4$ $120 \div 3 = 40$																	
Divide a 2-digit number by a 1-digit number - no exchange Partition into tens and ones to divide and then recombine.	... tens divided by ... is equal to ... tens. ... ones divided by ... is equal to ... ones. <table data-bbox="658 1251 1005 1490"><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> $60 \div 2 = 30$ $4 \div 2 = 2$ $64 \div 2 = 32$  <table data-bbox="1666 1251 2024 1490"><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>		Tens	Ones					Tens	Ones								
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Division

Progression of skills	Key representations																																					
Divide a 2-digit number by a 1-digit number - with remainders Encourage children to partition numbers flexibly to help them to divide more efficiently.	... tens divided by ... is equal to ... tens. ... ones divided by ... is equal to ... ones. <table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> 96 ÷ 4 80 ÷ 4 16 ÷ 4 80 ÷ 4 = 20 16 ÷ 4 = 4 96 ÷ 4 = 24	Tens	Ones											There are ... groups of ... There are ... remaining. 31 ÷ 4 = 7 r3 94 ÷ 4 = 23 r2 <table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table><table><tr><th>Tens</th><th>Ones</th></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table>	Tens	Ones											Tens	Ones										
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Unit fractions of a set of objects Bar models are useful to show the link between division and fractions, for example, dividing by 3 and finding a third.	The whole is divided into ... equal parts. Each part is $\frac{1}{\square}$ of the whole. $\frac{1}{4}$ of 12 apples is 3 apples.	One ... of ... is ... $\frac{1}{4}$ of 12 is 3 $\frac{1}{3}$ of 36 is 12																																				

Division

Progression of skills	Key representations	
Non-unit fractions of a set of objects Bar models are a useful representation and show the links with division and multiplication.	The whole is divided into ... equal parts. Each part is $\frac{1}{\square}$ of the whole.  $\frac{3}{4}$ of 12 apples is 9 apples.	$\frac{1}{\square}$ of ... is ..., so $\frac{\square}{\square}$ of ... is ... $\frac{3}{4}$ of 12 is 9  $\frac{2}{3}$ of 36 is 24 