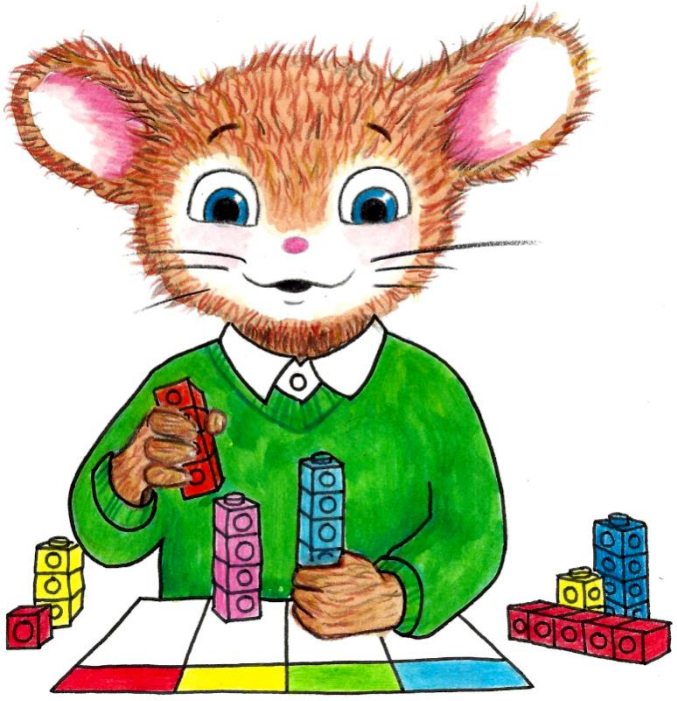
Meadows First School

Calculation Policy

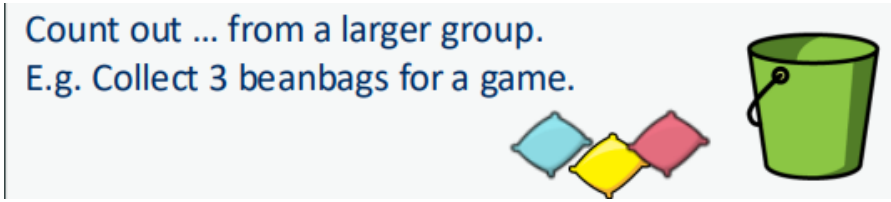
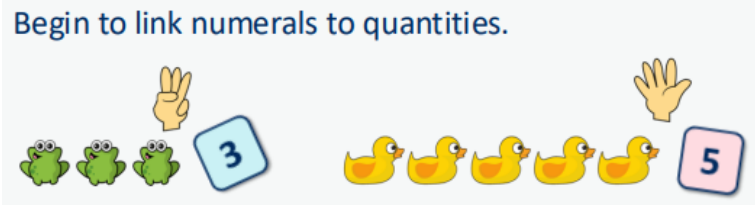


Progression of Skills

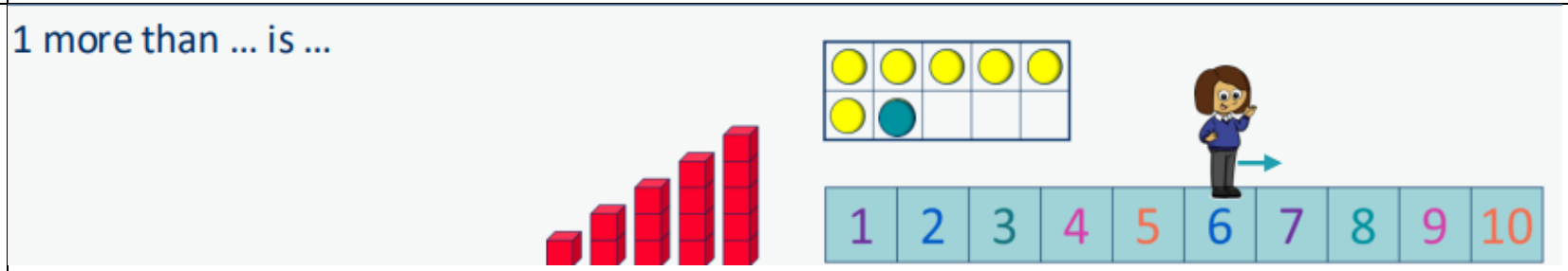
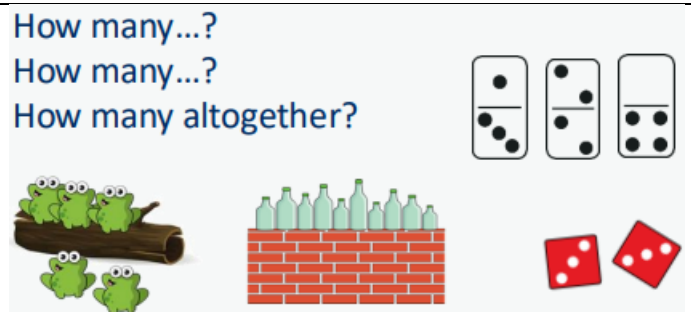
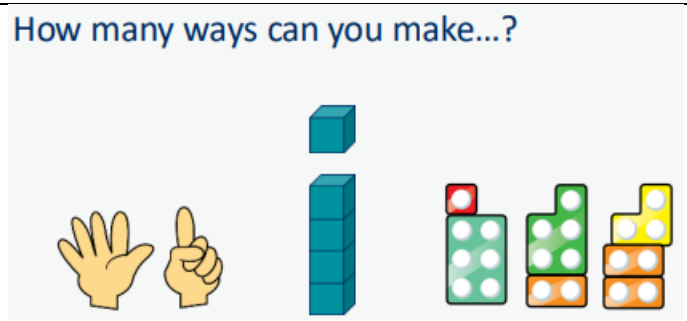
	Addition	Subtraction	Multiplication	Division
Nursery	Subitise to 3 Count how many Make numbers to 5 Add 1 more (through songs and rhymes)	Subitise to 3 Count how many Make numbers to 5 Take 1 away (through songs and rhymes)		
Reception	Conceptually subitise to 5 1 more Notice the composition of numbers within 10 Combine 2 groups Add more	Conceptually subitise to 5 1 less Notice the composition of numbers within 10 Partition Take away	Double to 10 Make equal groups	Sharing Grouping
Year 1	Add together Add more Bonds within 10 Related facts within 20 Missing numbers	Find a part Take away Bonds within 10 Related facts within 20 Missing numbers Find the difference (maths frog)	Count in 2s, 5s and 10s Add equal groups Make arrays Make doubles	Make equal groups – grouping Make equal groups – sharing Find a half Find a quarter
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	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 Find the difference (maths frog)	Link repeated addition and multiplication Use arrays Double The 2 times-table The 10 times-table The 5 times-table Missing numbers	Divide by 2 Divide by 10 Divide by 5 Missing numbers Unit fractions Non-unit fractions

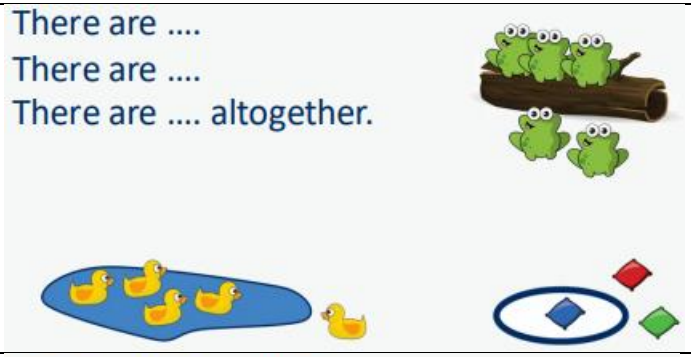
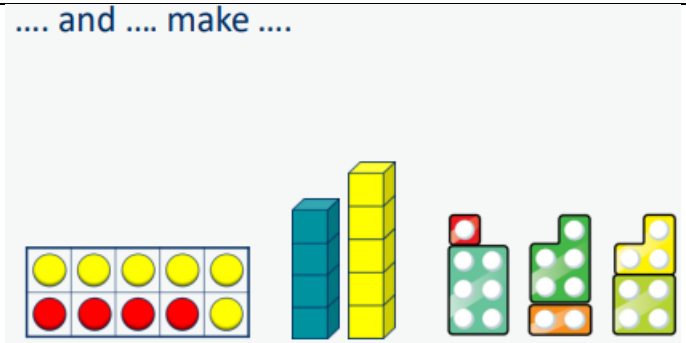
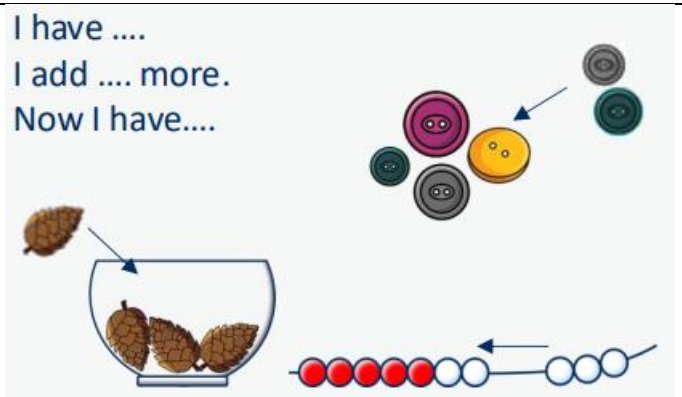
Year 3	Add 1s, 10s and 100s to a 3-digit number Add two numbers (no exchange) Add two numbers across a 10 or 100 (column addition More than one exchange) Complements to 100 Add fractions with the same denominator within 1 whole Calculate the duration of events	Subtract 1s, 10s and 100s from a 3-digit 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 Find the difference (maths frog) (2 and 3 digit)	The 3 times-table The 4 times-table The 8 times-table Related facts Multiply a 2-digit number by a 1-digit number (Grid Method) Scaling Correspondence problems	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
Year 4	Add 1s, 10s and 100s to a 4-digit number Add up to two 4-digit numbers (column addition) Add decimal numbers in the context of money Add fractions and mixed numbers with the same denominator beyond 1 whole	Subtract 1s, 10s, 100s and 1,000s from a 4-digit number Subtract up to two 4-digit numbers Subtract decimal numbers in the context of money Subtract fractions and mixed numbers with the same denominator Find the difference (maths frog) (3 and 4 digit)	Times-table facts to 12 × 12 Multiply by 1 and 0 Multiply 3 numbers Factor pairs Multiply by 10 and 100 Related facts Multiply a 2 or 3-digit number by a 1-digit number Scaling Correspondence problems	Division facts to 12 × 12 Divide a number by 1 and itself Related facts Divide a 2 or 3-digit number by a 1-digit number Divide by 10 and 100

Nursery Addition

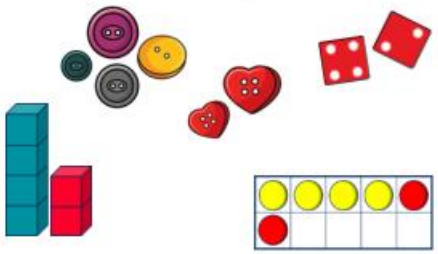
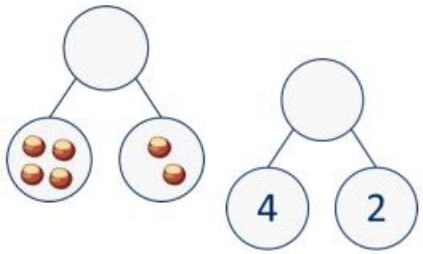
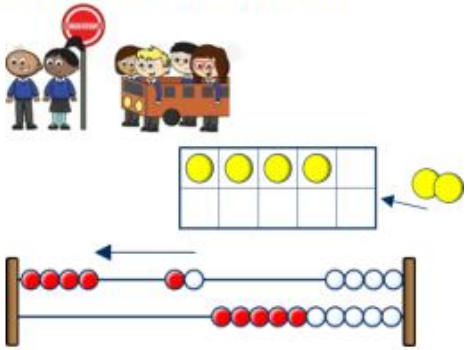
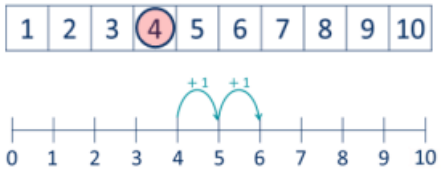
Skill	Key Representations
Subitise to 3	
Count how many	 
Make numbers to 5 Start by showing 1, 2 and 3 using fingers.	 
Add 1 more Through stories, songs and rhymes.	

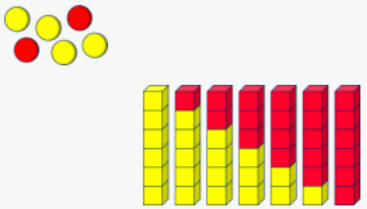
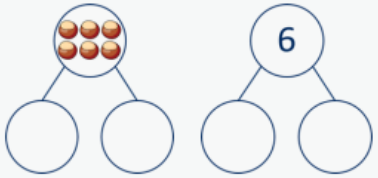
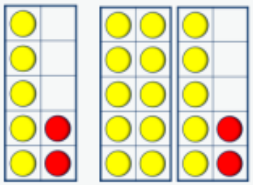
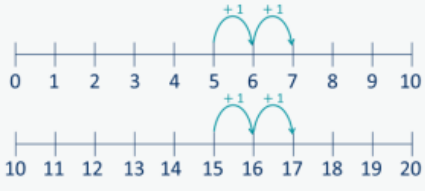
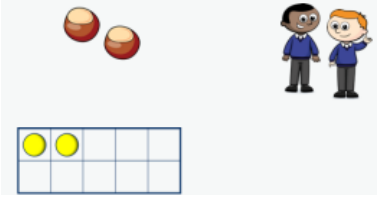
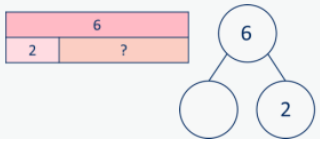
Reception Addition

Skill	Key Representations
Conceptually subitise to 5 Notice the parts that make up the whole.	
1 more Continue to link to stories, songs and rhymes	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	 

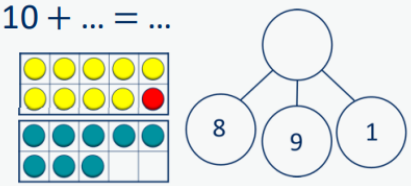
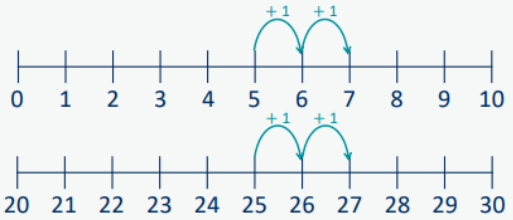
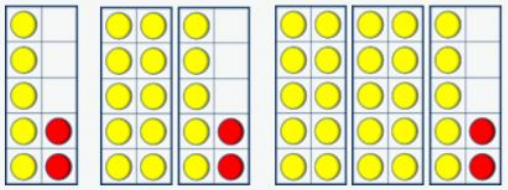
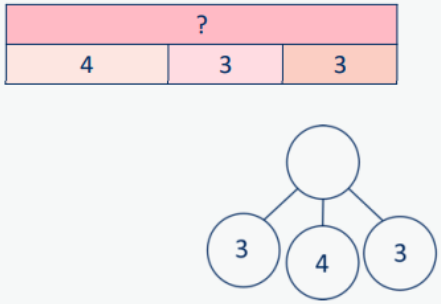
Combine 2 groups 2 groups are combined to find the total.		
Add more A quantity is increased.		

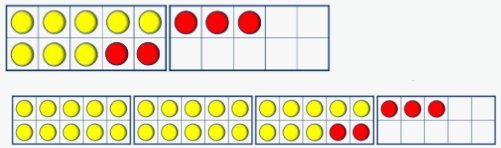
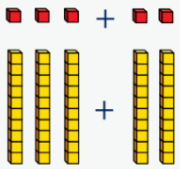
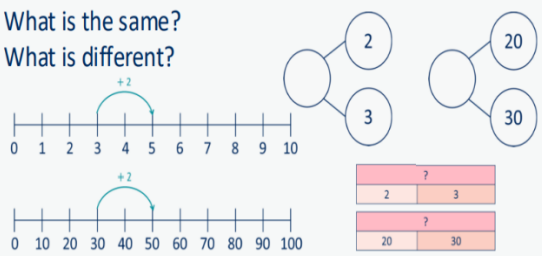
Year 1 Addition

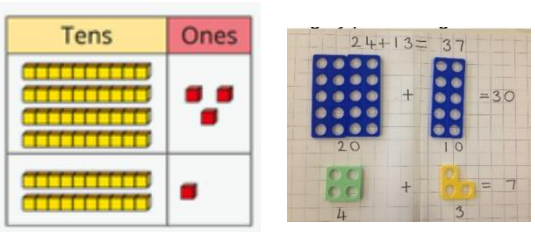
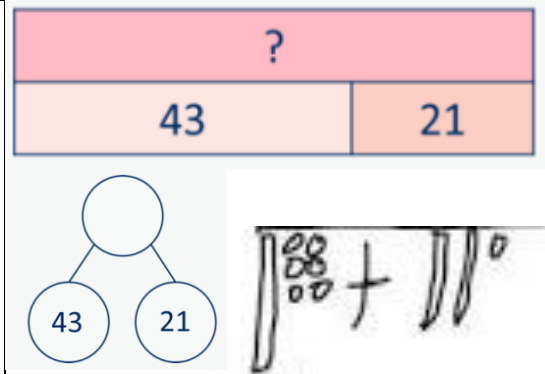
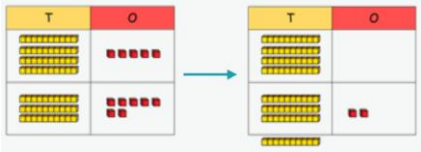
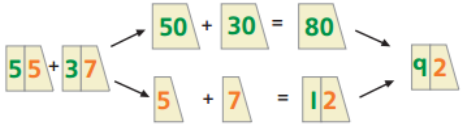
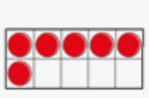
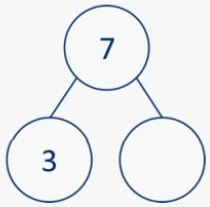
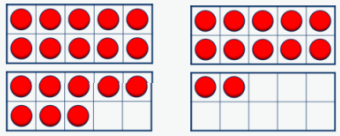
Skill	Concrete	Pictorial	Abstract
Add together (aggregation) 2 quantities are combined to find the total.	There are ... There are ... There are ... altogether. 	... is a part. ... is a part. ... is the whole. 	... plus ... is equal to ... ... is equal to .... + ... 4 + 2 = 6 2 + 4 = 6 6 = 4 + 2 6 = 2 + 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

Bonds 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 … $2+\square=6$ $6=2+\square$ 

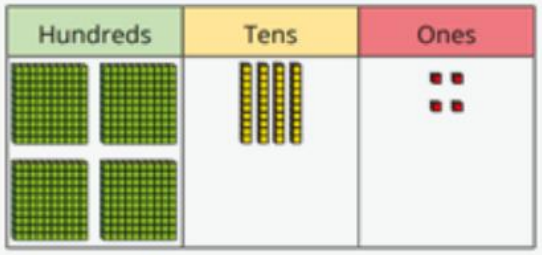
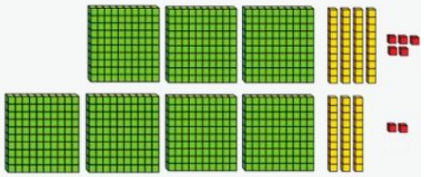
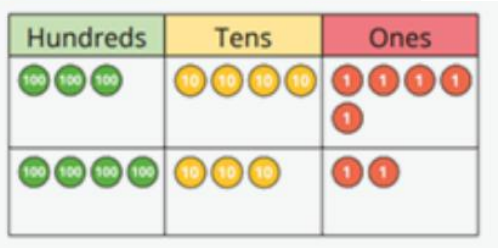
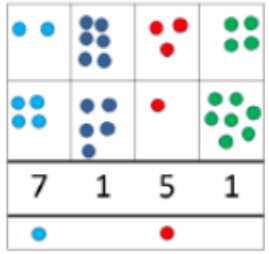
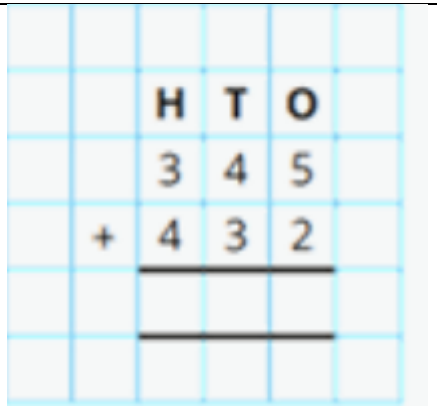
Year 2 Addition

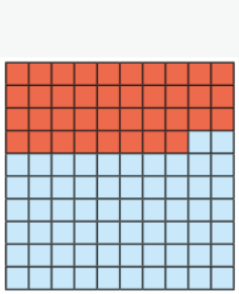
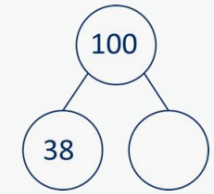
Skill	Concrete	Pictorial	Abstract
Add ones to any number (related facts) Make links to known facts.	… and … are a bond to 10 10 + … = …  	… more than … is … so … more than … is …  	What do you notice? Can you continue the pattern? 5 + 2 = 7 15 + 2 = 17 25 + 2 = 27…
Add three 1-digit numbers Prompt children to understand that addition can be done in any order and to make links to known facts.	I know that … and … = … so … and … = …  	Double … + … = …  	What do you notice? Which addition is the easiest to calculate? 8 + 9 + 1 = 8 + 1 + 9 = 9 + 1 + 8 =

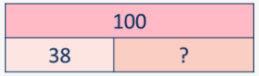
Add across a 10 Partition the number being added to make a full ten.	… can be partitioned into … and … 	8 + 5 2 3  	$8 + 5 = 13$ $28 + 5 = 33$
Add multiples of 10 Make links to known facts within ten.	… ones + … ones = … ones so … tens + … tens = … tens  3 + 2 = 5 30 + 20 = 50	What is the same? What is different?  	3 + 2 = 5 30 + 20 = 50
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

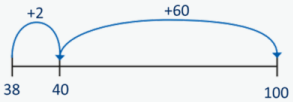
Add 2-digit numbers (not across a ten) Lining up ones and tens in columns will support with later written methods.	… ones + … ones = … ones … tens + … tens = … tens 		3 ones + 1 one = 4 ones 4 tens + 2 tens = 6 tens 6 tens + 4 ones = 64
Add 2-digit numbers (across a ten) Begin to exchange 10 ones for 1 ten.			55 + 37 = 50 + 30 = 80 5 + 7 = 12 80 + 12 = 92 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 + □ = 10 10 − □ = 6	If … is a whole and … is a part, then … is the other part. □ + 3 = 7 7 − 3 = □ 	… can be partitioned into … and … 10 + 8 = 12 + □ 

Year 3 Addition

Skill	Concrete	Pictorial	Abstract
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 …  444 + 5 = 444 + 50 = 444 + 500 =	 777 + 2 = 777 + 20 = 777 + 200 =	What patterns do you notice? 235 + 3 = 235 + 30 = 235 + 300 = 604 + 20 = 604 + 50 = 604 + 90 = 111 + ☐ = 118 111 + ☐ = 181 111 + ☐ = 811
Add two numbers (no exchange) Mental strategies and introduction of formal written method.	  	Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding.  	

<table>
<tr>
<td>Complements to 100
Pairs of numbers which total 100</td>
<td>
... plus ... is equal to 100





</td>
<td>
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
</td>
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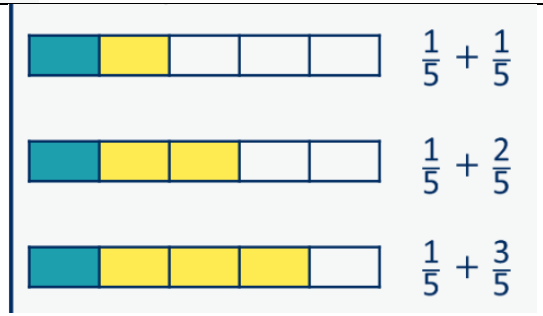
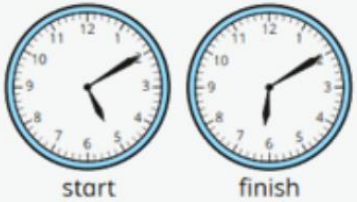
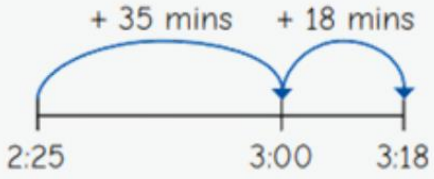
<tr>
<td>Add fractions with the same denominator within 1 whole
Make links with known facts.</td>
<td>



</td>
<td>


</td>
</tr>
<tr>
<td>Calculate the duration of events Find durations of time between a given start and end point.
Children will need to calculate complements to 60</td>
<td colspan="2">
From ... to ... o'clock is ... minutes.
From ... o'clock to ... is ... minutes.
The total time taken is ... minutes.




</td>
</tr>
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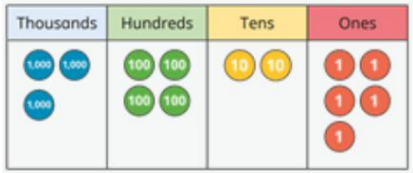
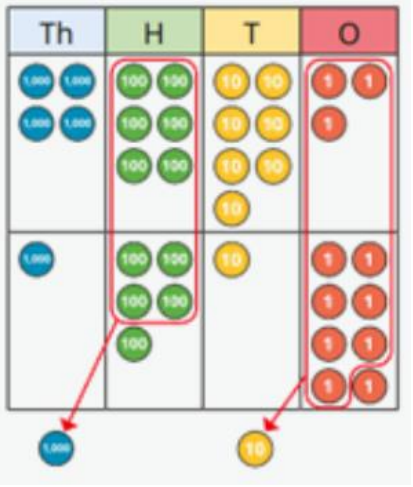
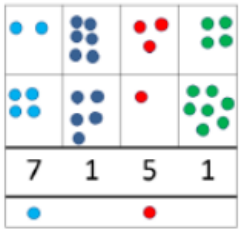
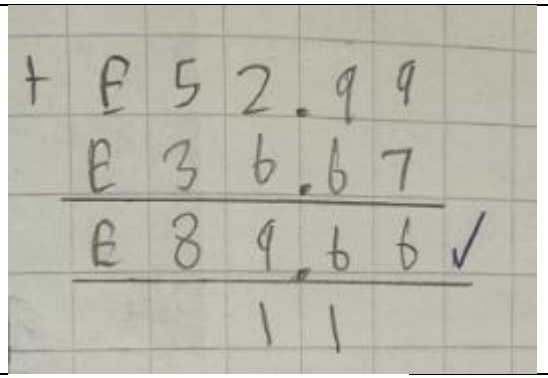
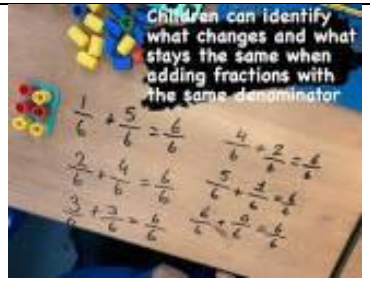
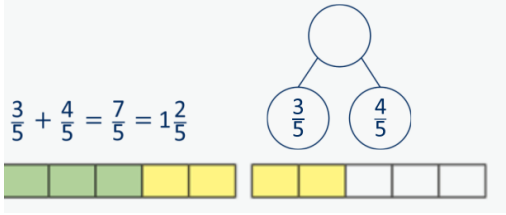
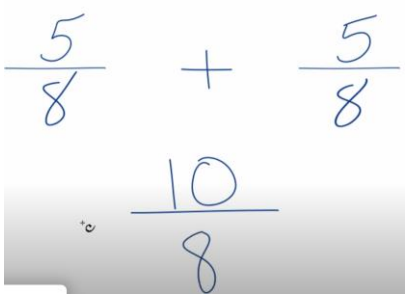
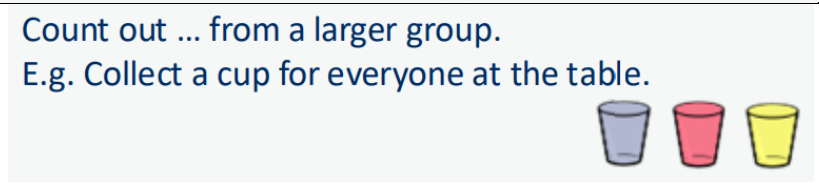
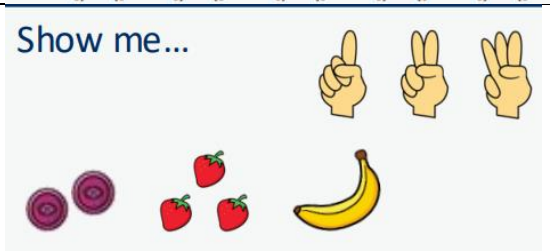
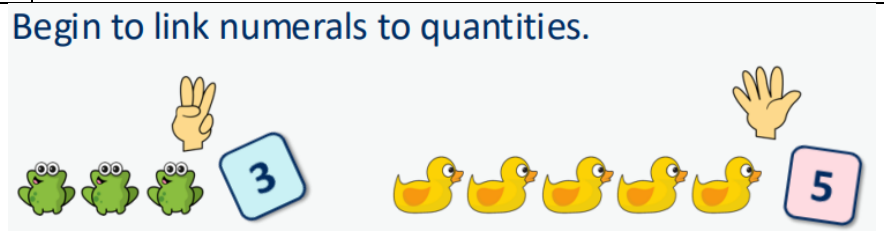
Year 4 Addition

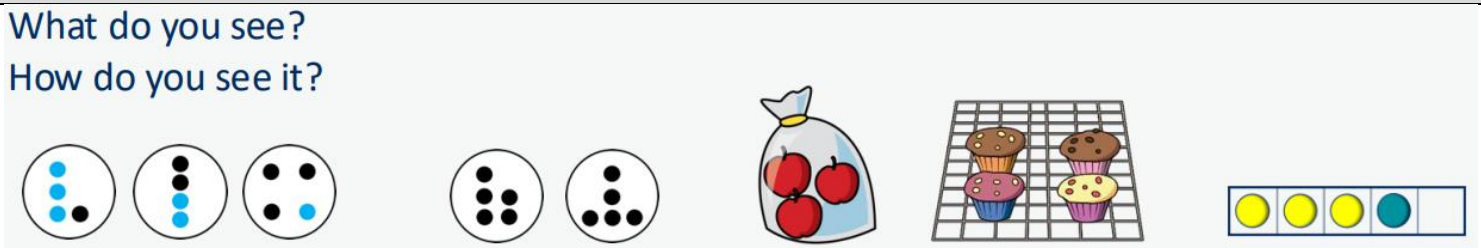
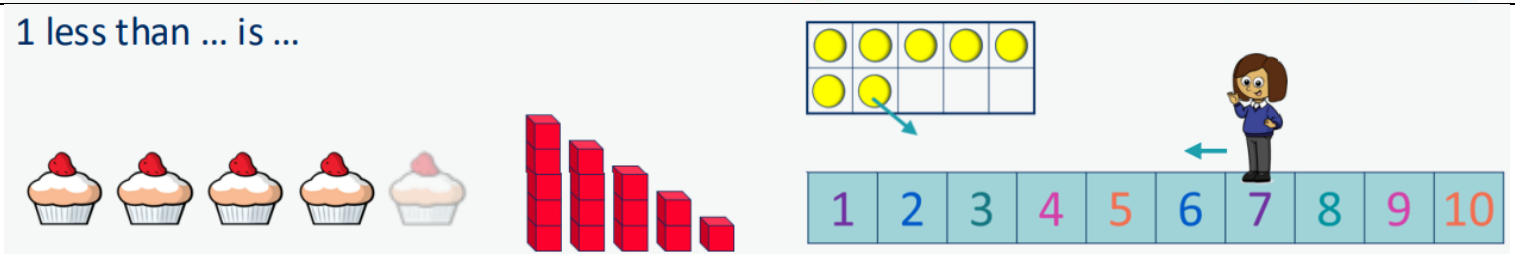
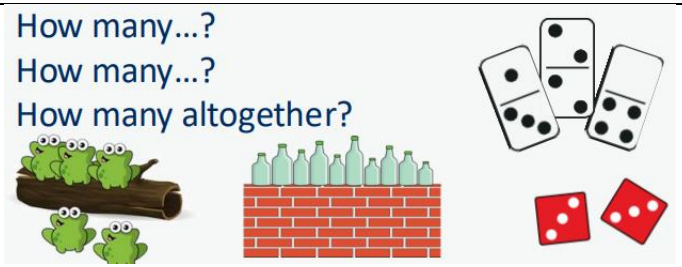
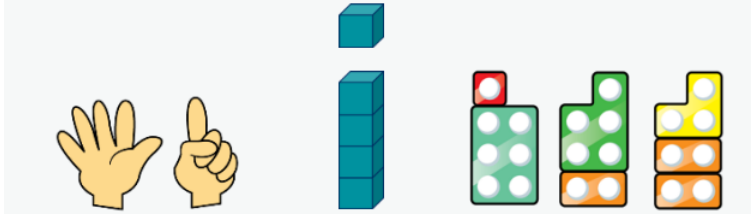
Skill	Concrete	Pictorial	Abstract
Add 1s, 10s and 100s to a 4-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds/thousands column will increase by …  3,425 + 3 = 3,425 + 30 = 3,425 + 300 = 3,425 + 3,000 =		What patterns do you notice? 2,350 + 3 = 2,350 + 30 = 2,350 + 300 = 2,350 + 3,000 = 6,040 + 200 = 6,040 + 500 = 6,040 + 900 = 2,211 + ☐ = 2,251 2,211 + ☐ = 2,215 2,211 + ☐ = 2,511
Add up to two 4-digit numbers Column addition *Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations.*	 	Children can draw a pictoral representation of the columns and place value counters to further support their learning and understanding.  7 1 5 1	

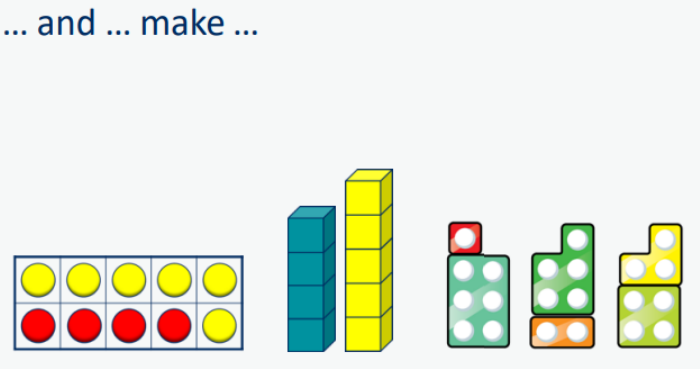
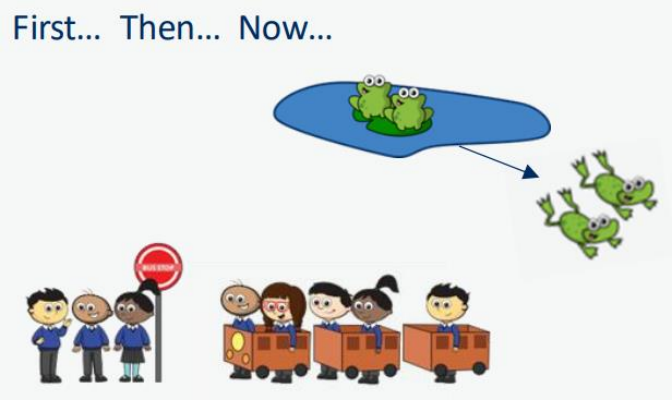
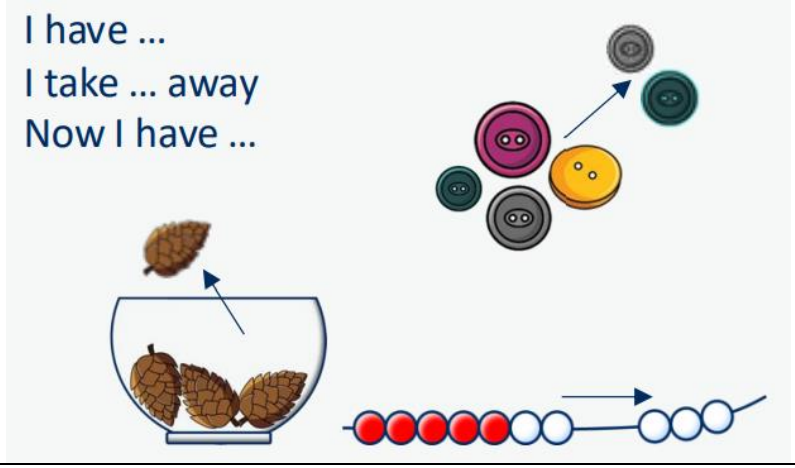
<table>
<tr>
<td>Add decimal numbers in the context of money
(mental methods
And column subtraction)</td>
<td>… pence + … pence = … pence
… pounds + … pounds = … pounds
 
45p + 25p = 70p
£2 + £3 = £5
£5 + 70p = £5.70</td>
<td>  </td>
<td>  </td>
</tr>
<tr>
<td>Add fractions and mixed numbers with the same denominator beyond 1 whole</td>
<td>  </td>
<td>  </td>
<td>  </td>
</tr>
</table>

Nursery Subtraction

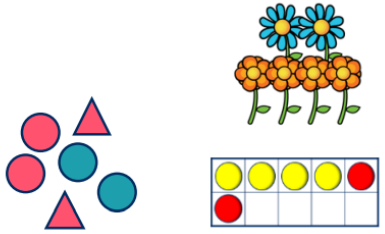
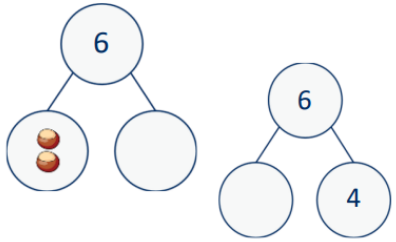
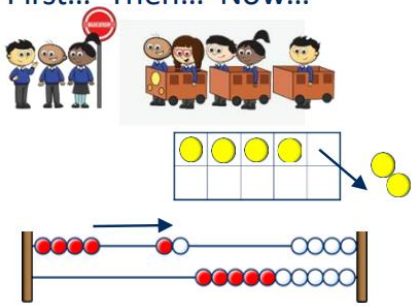
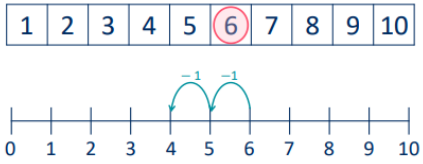
Skill	Key Representations
Subitise to 3 Instantly see how many.	
Count how many Begin to count objects using 1-1 correspondence.	 
Make numbers to 5 Start by showing 1, 2 and 3 using fingers.	 
Take 1 away Through stories, songs and rhymes.	

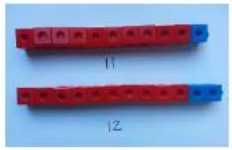
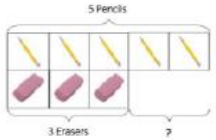
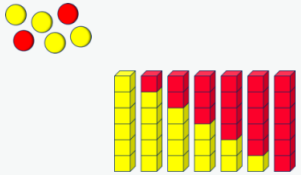
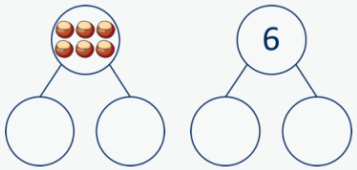
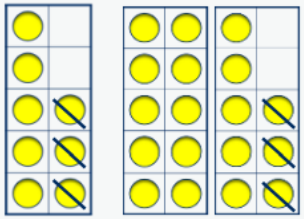
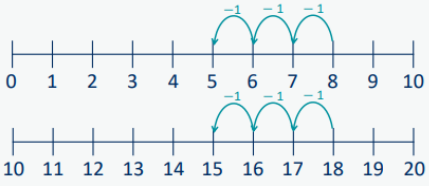
Reception Subtraction

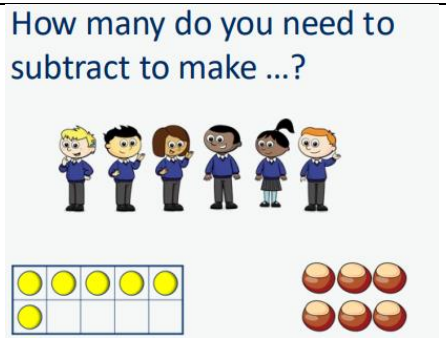
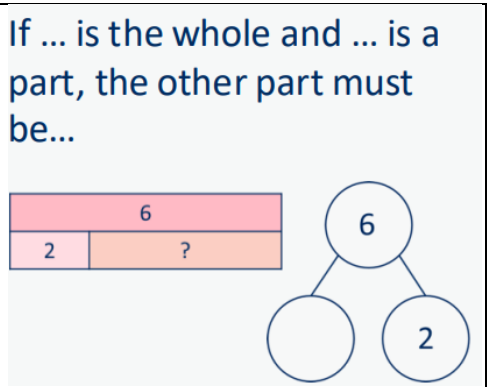
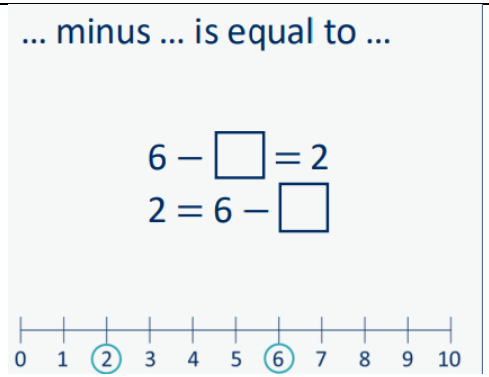
Skill	Key Representations
Conceptually subitise to 5 Notice the parts that make up the whole.	
1 less Continue to link to stories, songs and rhymes.	
Notice the composition of numbers within 10 Link to stories, songs and rhymes.	 

Partition Using objects, explore different ways to partition a number into 2 or more parts.		
Take away A quantity is reduced.		

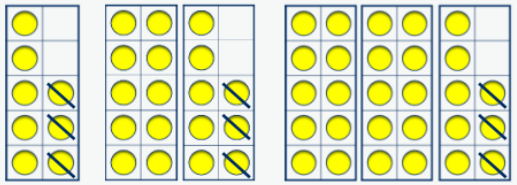
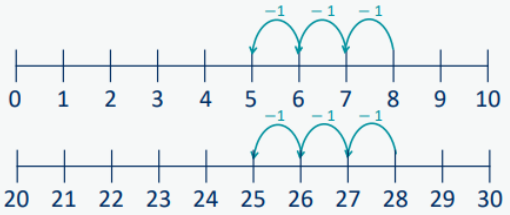
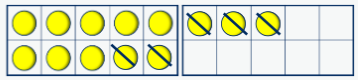
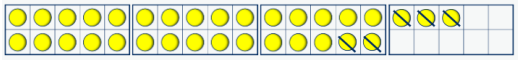
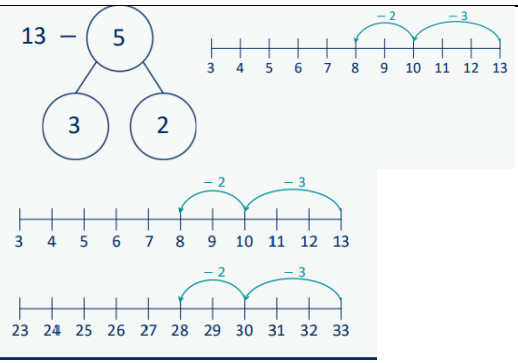
Year 1 Subtraction

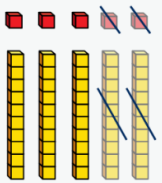
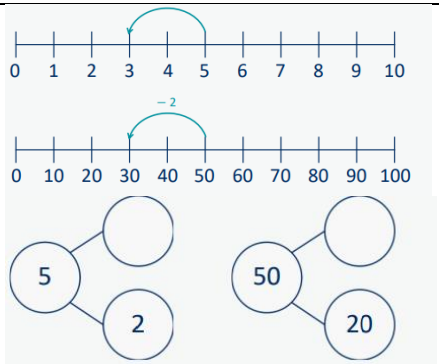
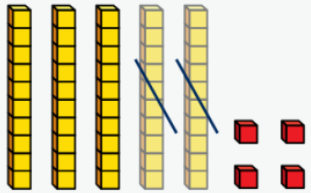
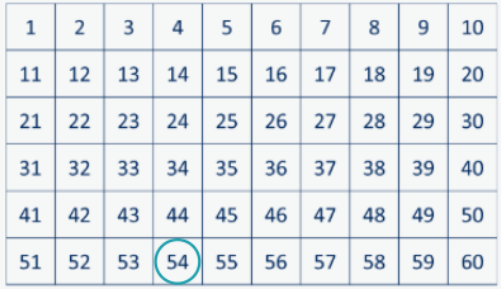
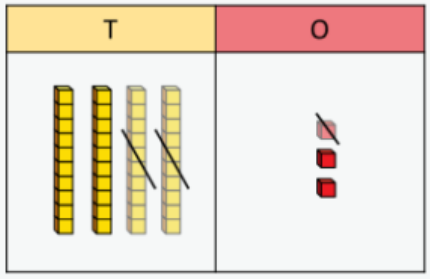
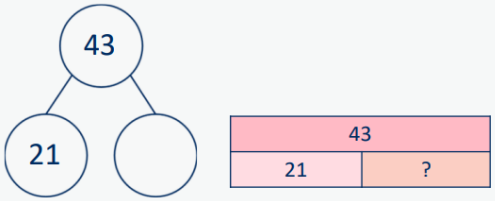
Skill	Concrete	Pictorial	Abstract
Find a part *Link to number bonds and known facts. E.g. 2 + 4 = 6 so if 6 is the whole and 4 is a part, the other part must be 2*	There are … in total. … are … How many are **not** …? 	… is the whole. … is a part. … is a part. 	… subtract … is equal to … … is equal to … − … $6-2=4$ $6-4=2$ $4=6-2$ $2=6-4$
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 … − … $6-2=4$ $6-4=2$ $4=6-2$ $2=6-4$

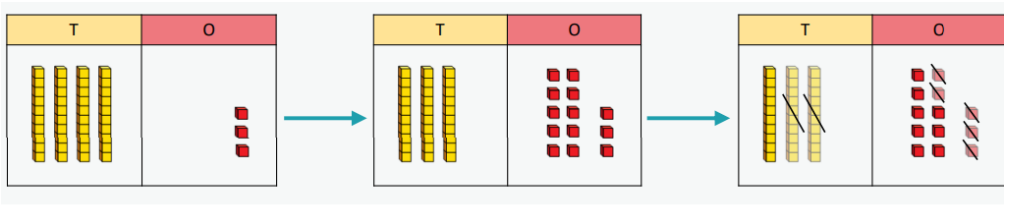
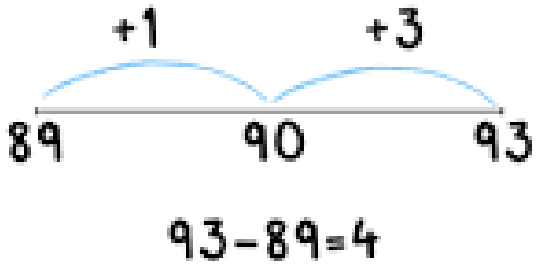
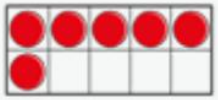
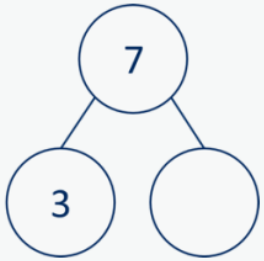
<table>
<tr>
<td>Maths frog</td>
<td colspan="2">Compare amounts and objects to find the difference.
 
Use cubes to build towers or make bars to find the difference
 
Use basic bar models with items to find the difference</td>
<td>6 – 5 = 1
Counting up from 5 -to 6.</td>
</tr>
<tr>
<td>Bonds within 10 Focus on subtraction facts. Encourage children to notice patterns.</td>
<td>… is made of … and …
… and … make …
  </td>
<td>… can be partitioned into … and …
 
</td>
<td>… 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</td>
</tr>
<tr>
<td>Related facts within 20
Make links to known facts.</td>
<td>I know that … minus … = …
so … minus … = …
  </td>
<td>… less than … is …
so … less than … is …
 
</td>
<td>What patterns do you notice?
8 – 3 = 5
18 – 3 = 15
5 = 8 – 3
15 = 18 – 3</td>
</tr>
</table>

Missing numbers Make links to known facts.			

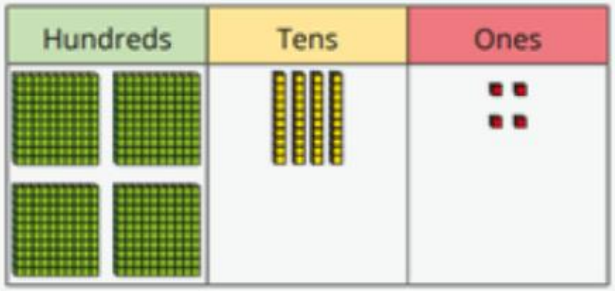
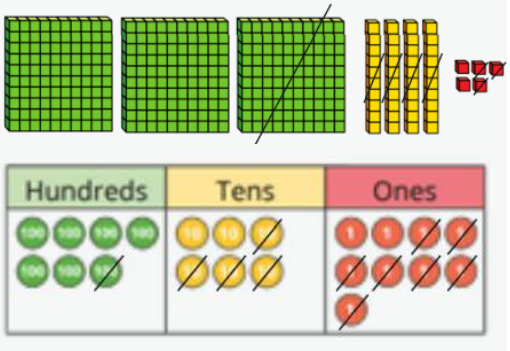
Year 2 Subtraction

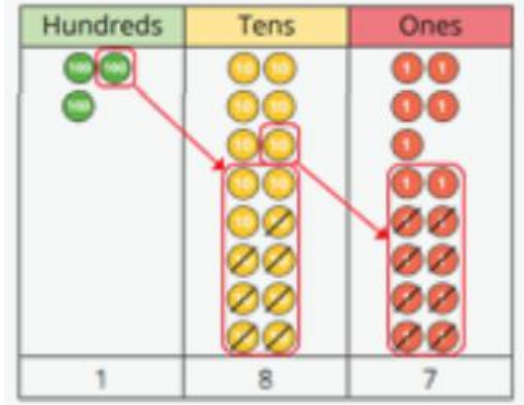
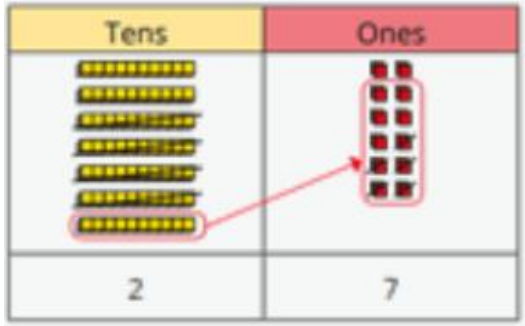
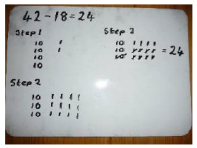
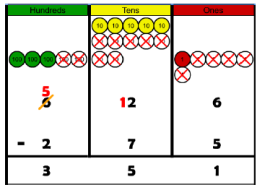
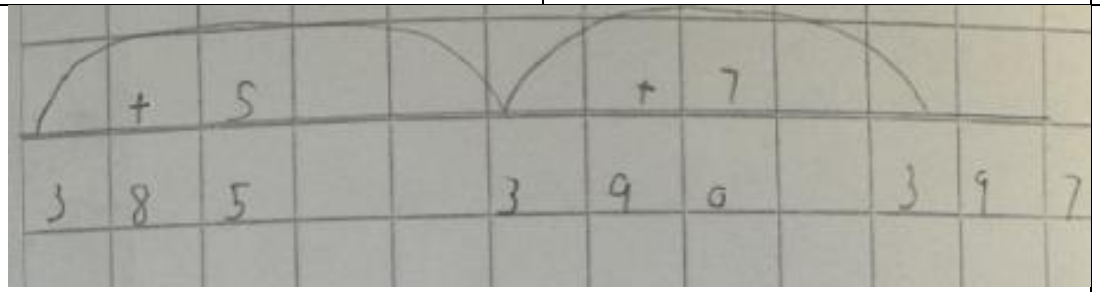
Skill	Concrete	Pictorial	Abstract
Subtract ones from any number (related facts) Make links to known facts.	I know that … minus … = … so … minus … = … 	… less than … is … so … less than … is … 	What do you notice? Can you continue the pattern? 8 – 3 = 5 18 – 3 = 15 28 – 3 = 25…
Subtract across a 10 Partition the number being subtracted to bridge through a ten.	… can be partitioned into … and …  		23 – 7 =

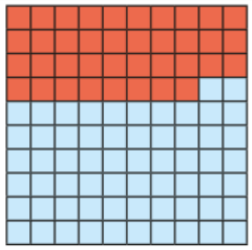
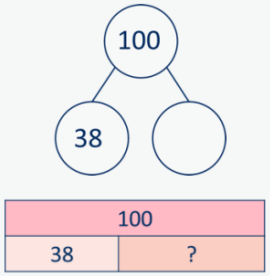
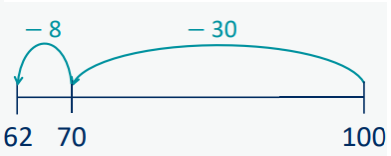
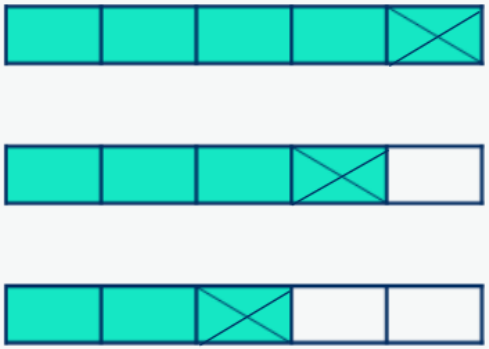
Subtract multiples of 10 Make links to known facts within ten.	… ones − … ones = … ones so … tens − … tens = … tens  5 − 2 = 3 50 − 20 = 30	 	5 − 2 = 50 − 20 =
Subtract 10s from any number Make links to known facts.	… tens − … tens = … tens … tens and … ones = … 	To subtract … I need to subtract 10 … times.  	I know that … minus … = . so … minus … = … 50 − 20 = 30 54 − 20 = 34
Subtract two 2-digit numbers (not across a ten)	 	 	3 ones − 1 one = 2 ones 4 tens − 2 tens = 2 tens 2 tens and 2 ones = 22 43 − 21 =

Subtract two 2-digit numbers (across a ten) Begin to exchange 1 ten for 10 ones.	*43 – 25*  	13 ones – 5 ones = 8 ones 3 tens – 2 tens = 1 ten 1 ten and 8 ones = 18 43-25 =
Maths Frog Subtract by counting up	 	53 – 49 = 4
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. $7 - 3 = \square$ $\square + 3 = 7$  	$18 - \square = 12 + 2$

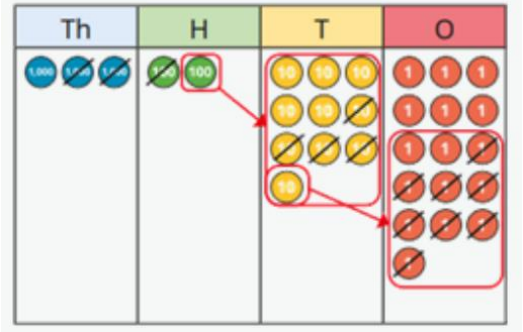
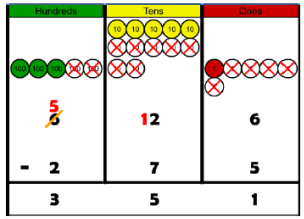
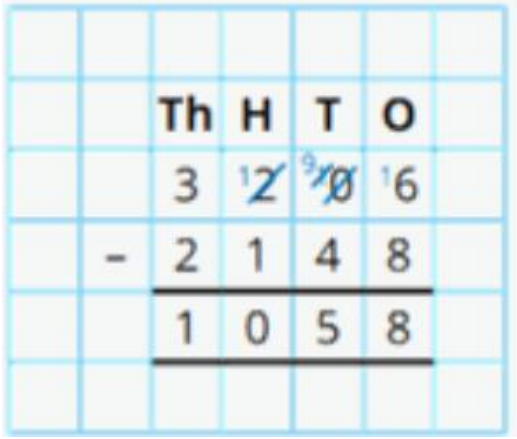
Year 3 Subtraction

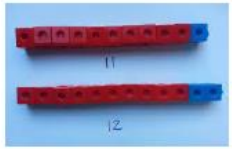
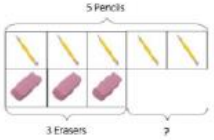
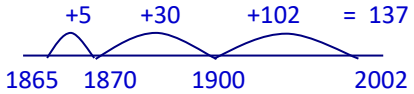
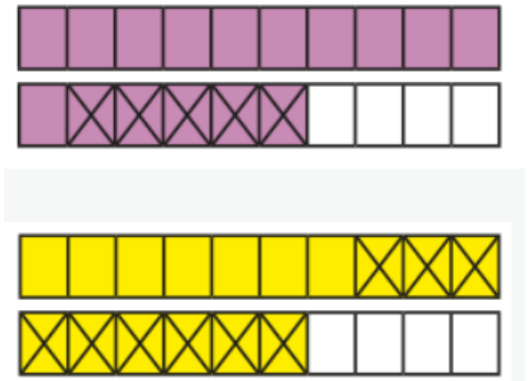
Skill	Concrete	Pictorial	Abstract
Subtract 1s, 10s and 100s from a 3-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.	The ones/tens/hundreds column will decrease by .  444 – 2 = 444 – 20 = 444 – 200 =	 777 – 4 = 777 – 40 = 777 – 400 =	What patterns do you notice? 235 – 3 = 235 – 30 = 235 – 300 = 624 – 20 = 654 – 50 = 694 – 90 = 118 – ☐ = 111 181 – ☐ = 111 811 – ☐ = 111
Subtract two numbers (no exchange) Mental strategies and introduction of formal written method. Column subtraction (no exchange)	 		

Subtract two numbers across a 10 or 100 Formal written method involving up to 2 exchanges including 3-digit subtract 2-digit numbers Column Subtraction (more than 1 exchange)	 	 When confident, children can find their own way to record the exchange/regrouping. Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.  Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.	
Maths Frog Subtract by counting up			397 – 385= 12

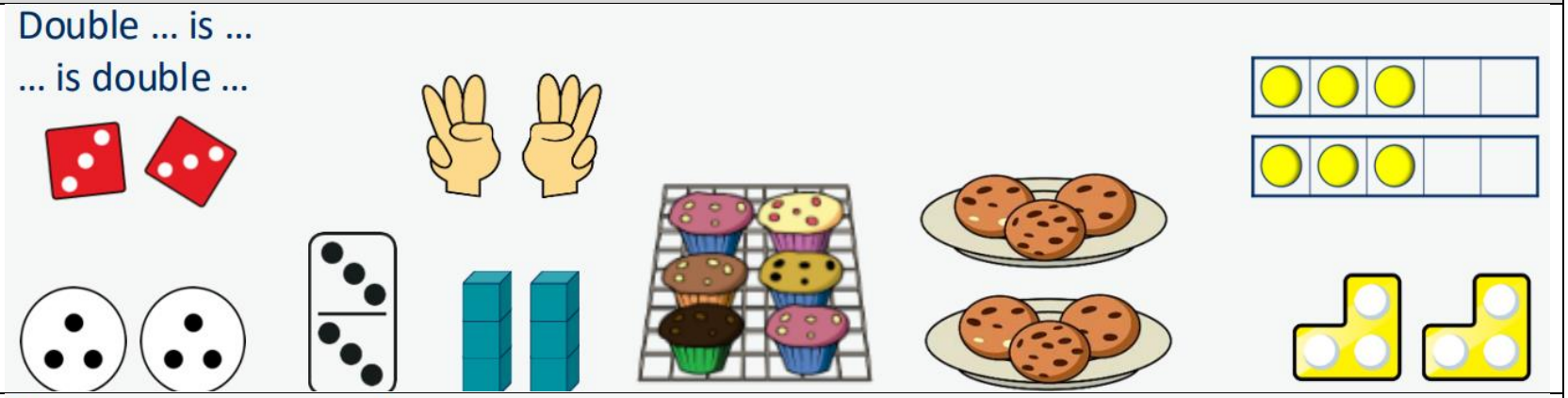
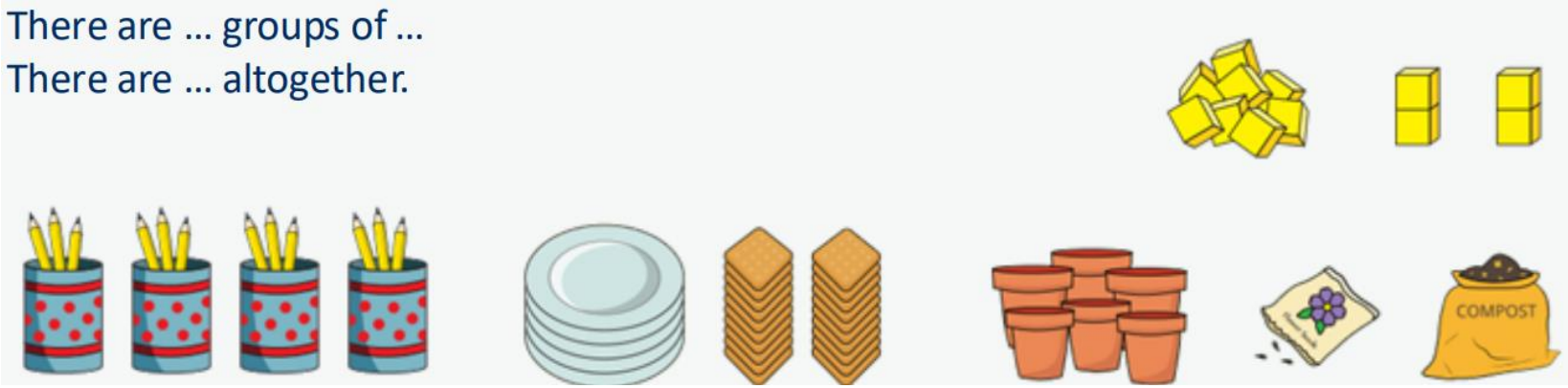
Complements to 100 Focus on subtraction facts. Encourage children to notice patterns.	100 minus … is equal to …   		$100 - 38 = 62$ $100 - 62 = 38$ $62 = 100 - 38$ $38 = 100 - 62$
Subtract fractions with the same denominator within 1 whole Make links with known facts			$\frac{5}{5} - \frac{1}{5}$ $\frac{4}{5} - \frac{1}{5}$ $\frac{3}{5} - \frac{1}{5}$

Year 4 Subtraction

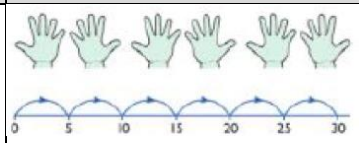
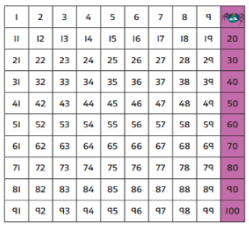
Skill	Concrete	Pictorial	Abstract
Subtract 1s, 10s, 100s and 1,000s from a 4-digit number Emphasis on mental strategies including number bonds and related facts. Prompt children to notice which digit changes.			What patterns do you notice? 4,356 – 3 = 4,356 – 30 = 4,356 – 300 = 4,356 – 3,000 = 6,940 – 200 = 6,940 – 300 = 6,940 – 400 = 4,433 – ☐ = 4,430 4,433 – ☐ = 4,033 4,433 – ☐ = 4,403
Subtract up to two 4-digit numbers Formal written method with up to 3 exchanges. Encourage children to estimate and use inverse operations to check answers to calculations.		 Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.	

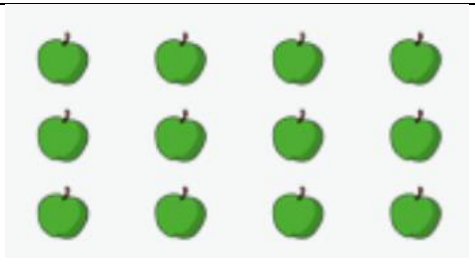
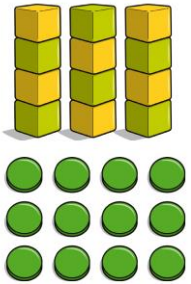
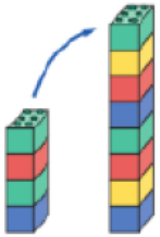
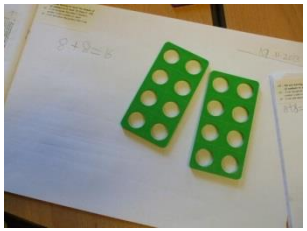
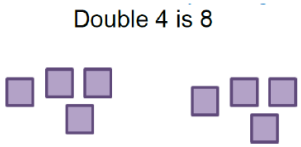
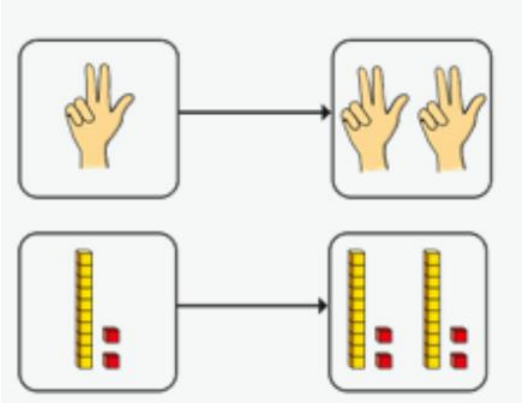
Maths Frog Counting up to find the difference (3 digit and 4 digit)	Compare amounts and objects to find the difference.  Use cubes to build towers or make bars to find the difference  Use basic bar models with items to find the difference	Continue to develop counting up subtraction with larger numbers *e.g 2002-1865*  	2002 – 1865=
Subtract decimal numbers in the context of money. (maths Frog)	 		£5 – £3.26
Subtract fractions and mixed numbers with the same denominator Include subtracting fractions from wholes			$\frac{16}{10} - \frac{5}{10}$ $\frac{16}{10} - \frac{9}{10}$

Reception Multiplication

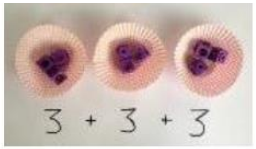
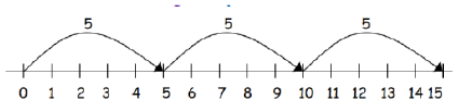
Skill	Key Representations
Double to 10 Prompt children to notice that double means twice as many and to notice that there are two equal groups.	
Make equal groups Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	

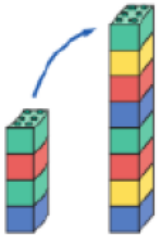
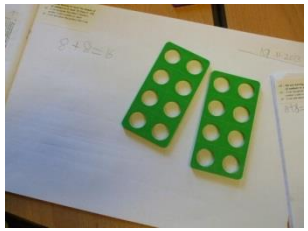
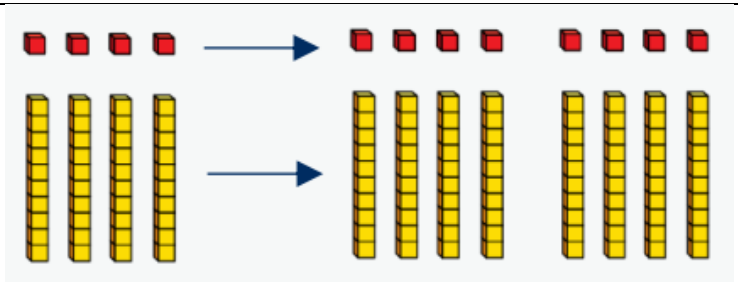
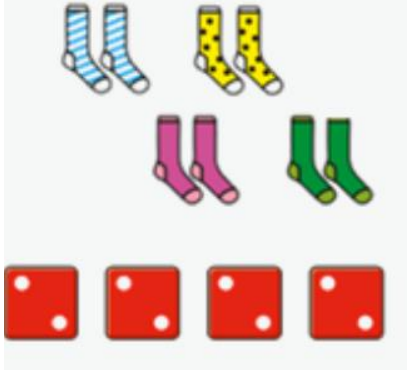
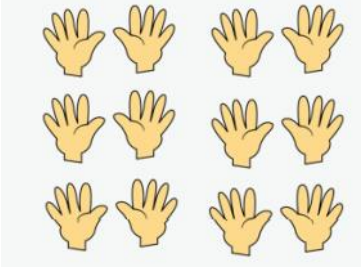
Year 1 Multiplication

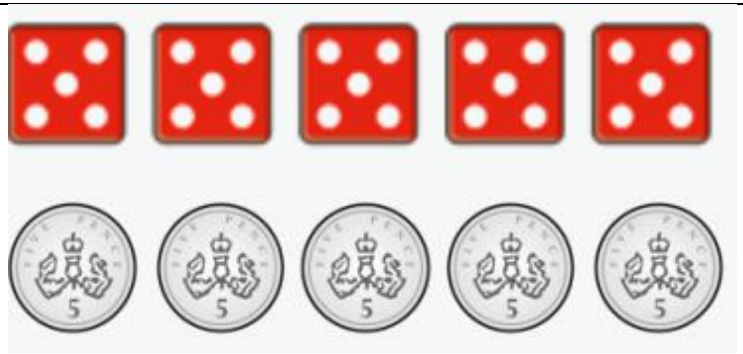
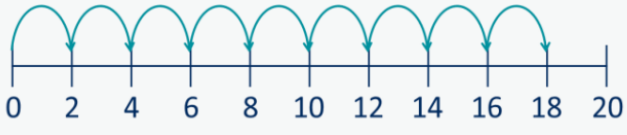
Skill	Concrete	Pictorial	Abstract
Count in 2s, 5s and 10s Begin by counting objects that naturally come in 2s, 5s and 10s, for example pairs of socks or fingers.	  	 	Count in multiples of a number aloud. Write sequences with multiples of numbers. 2, 4, 6, 8, 10 5, 10, 15, 20, 25 , 30
Add equal groups (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.			$2 + 2 + 2 =$ $5 + 5 + 5 =$ $10 + 10 + 10 =$

Make arrays Children use their knowledge of adding equal groups to arrange objects in columns and rows.	 	 	
Make doubles Children understand that doubles are two equal groups. Children may begin to explore doubles beyond 20 using base 10	Use practical activities to show how to double a number.  double 4 is 8 $4 \times 2 = 8$ 	Draw pictures to show how to double a number. Double 4 is 8  	Double 4 is 8. 4 +4 =8

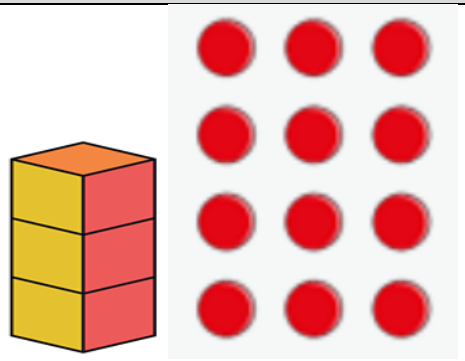
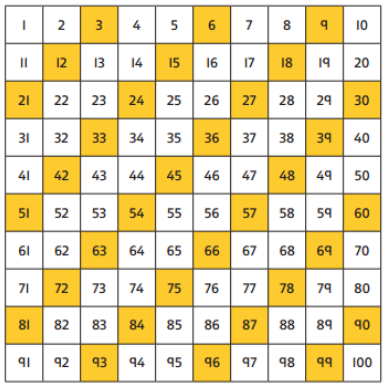
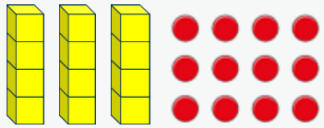
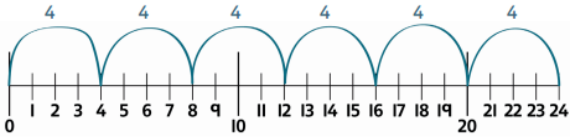
Year 2 Multiplication

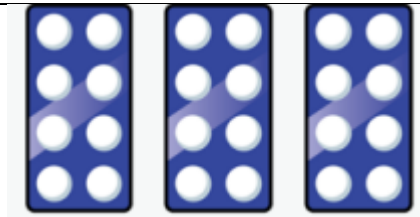
Skill	Concrete	Pictorial	Abstract
Link repeated addition and multiplication Encourage children to make the link between repeated addition and multiplication.	   Use different objects to add equal groups.	There are 3 plates. Each plate has 2 star biscuits on. How many biscuits are there?  2 add 2 add 2 equals 6  5 + 5 + 5 = 15	3 + 3 = 6 2 × 3 = 6 5 + 5 + 5 + = 20 4 × 5 = 20
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 lots of 5 = 15 5 + 5 + 5 = 15 5 lots of 3 = 15 3 + 3 + 3 + 3 + 3 = 15	I can see … × … and … ×… 3 × 5 = 15 5 × 3 = 15 3 × 5 = 5 × 3

Double Encourage children to make links with related facts.	Use practical activities to show how to double a number.   double 4 is 8 $4 \times 2 = 8$		4 +4 = 8 40 + 40 = 80
The 2 times-table Encourage daily counting in multiples both forwards and back. Notice that all multiples of 2 are even numbers.			$1 \times 2 = 2 \quad 2 = 1 \times 2$ $2 \times 2 = 4 \quad 4 = 2 \times 2$ $3 \times 2 = 6 \quad 6 = 3 \times 2$
The 10 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.			$1 \times 10 = 10$ $2 \times 10 = 20$ $3 \times 10 = 30$

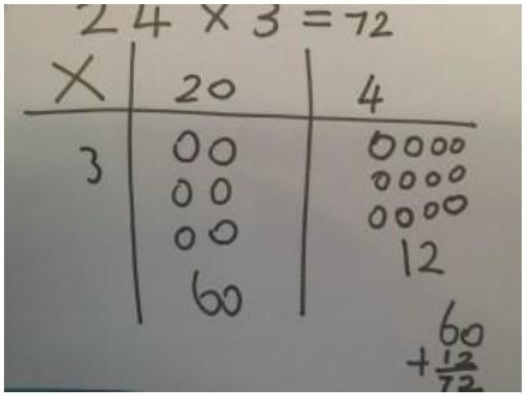
The 5 times-table Encourage daily counting in multiples both forwards and back. Notice the pattern in the numbers.			$1 \times 5 = 5$ $2 \times 5 = 10$ $3 \times 5 = 15$
Missing numbers Make links to known facts.	… is equal to … groups of … 18 socks, how many pairs?  		… times … is equal to … $\square \times 2 = 18$ $18 = 2 \times \square$

Year 3 Multiplication

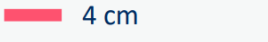
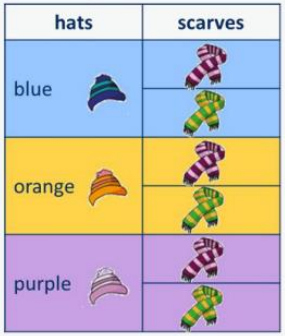
Skill	Concrete	Pictorial	Abstract
The 3 times-table Encourage daily counting in multiples both forwards and back			$4 \times 3 = 12 \quad 12 = 4 \times 3$
The 4 times-table Encourage daily counting in multiples both forwards and back. Encourage children to notice links between the 2 and 4 times-tables.	… groups of 4 = … × 4 = 4, … times = 4 × … = 		$3 \times 4 = 12 \quad 12 = 3 \times 4$

<table>
<tr>
<td>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.</td>
<td>  </td>
<td>
<table>
<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>
</td>
<td>$3 \times 8 = 24$ $24 = 3 \times 8$</td>
</tr>
<tr>
<td>Multiply a 2-digit number by a 1-digit number- no exchange

Grid Method</td>
<td>... tens multiplied by ... is equal to ... tens.
...ones multiplied by ... is equal to ... ones.
 
</td>
<td>Children can represent the work they have done with place value counters in a way that they understand.

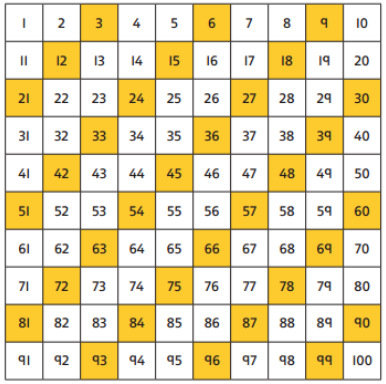
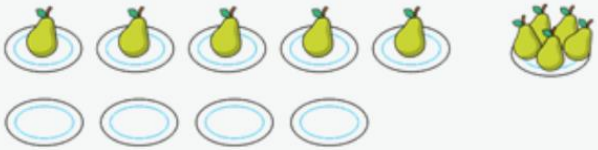
They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.
 
</td>
<td>Start with multiplying by one digit numbers and showing the clear addition alongside the grid.
<table>
<tr><td>×</td><td>20</td><td>3</td></tr>
<tr><td>4</td><td>80</td><td>12</td></tr>
</table>
= 92</td>
</tr>
</table>

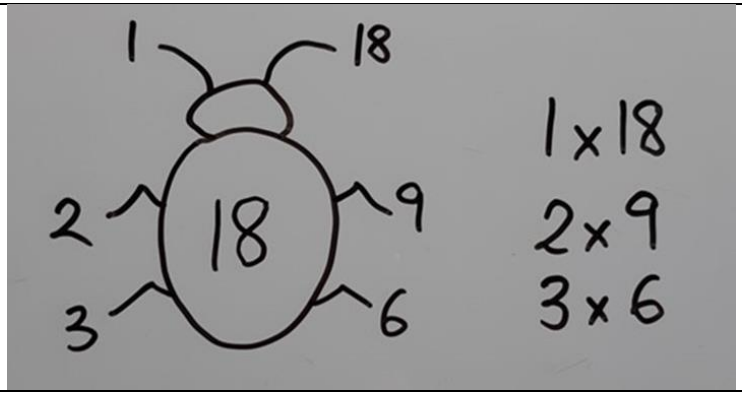
<table>
<tr>
<td>Scaling Children focus on multiplication as scaling (…. times the size) as opposed to repeated addition</td>
<td>  </td>
<td>There are …. times as many … as …
 

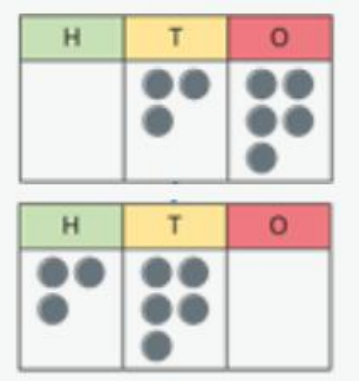
There are 3 times as many triangles as circles.</td>
<td>… is … times the size of …
… is … times the length/height of …
 
</td>
</tr>
<tr>
<td>Correspondence problems (How many ways?) Encourage children to work systematically to find all the different possible combinations</td>
<td colspan="3">For every … , there are … possible …
There are … × … possibilities altogether.
 
 

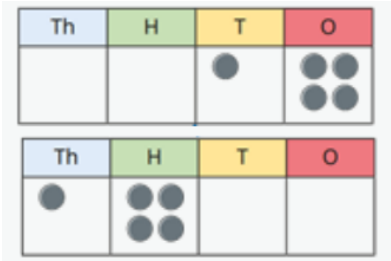
For every hat, there are two possible scarves.
3 × 2 = 6
There are 6 possibilities altogether.</td>
</tr>
</table>

Year 4 Multiplication

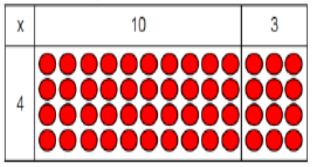
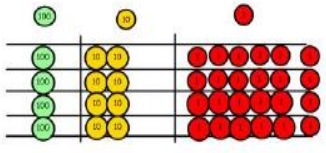
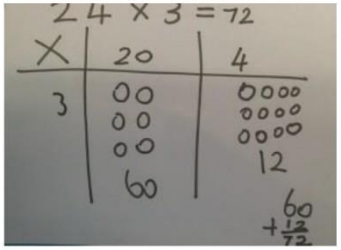
Skill	Concrete	Pictorial	Abstract
Times-table facts to 12 × 12 Encourage daily counting in multiples both forwards and back. Encourage children to notice links between related times-tables.	  		12 x 4 6 x 11
Multiply by 1 and 0	 1 x 4 = 4	Any number multiplied by 1 is equal to … Any number multiplied by 0 is equal to … 	… × … = … 1 × 1 = 1 1 × 0 = 0 2 × 1 = 2 2 × 0 = 0 3 × 1 = 3 3 × 0 = 0 4 × 1 = 4 4 × 0 = 0

<table>
<tr>
<td>Multiply 3 numbers
Children use their understanding of commutativity to multiply more efficiently</td>
<td colspan="2">To work out … × … × …, I can first calculate … × … and then multiply the answer by …
 
$4 \times 2 \times 3 = 8 \times 3 = 24$
$2 \times 3 \times 4 = 6 \times 4 = 24$
$3 \times 4 \times 2 = 12 \times 2 = 24$</td>
</tr>
<tr>
<td>Factor pairs Children explore equivalent calculations using different factors pairs.</td>
<td> 
</td>
<td>Factor Pairs of 18

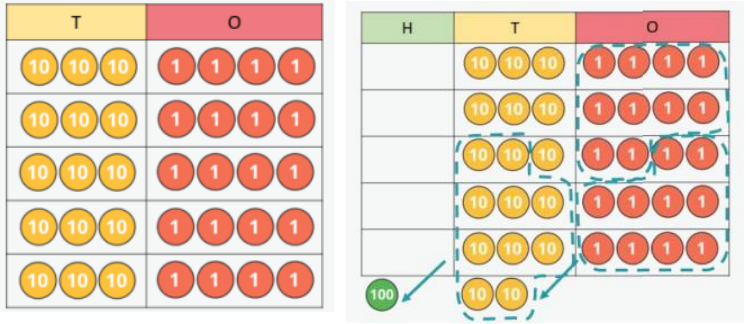
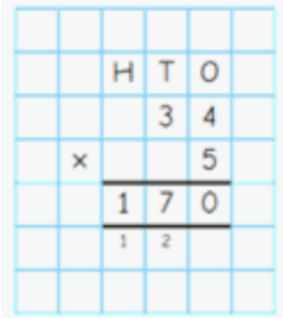
1 x 18
2 x 9
3 x 6</td>
</tr>
<tr>
<td>Multiply by 10 and 100
Some children may overgeneralise that multiplying by 10 or 100 always results in adding zeros. This will cause issues later when multiplying decimals.</td>
<td>When I multiply by 10, the digits move … place value column to the left. … is 10 times the size of …
 

When I multiply by 100, the digits move … place value columns to the left. … is 100 times the size of …
 
</td>
<td>35 × 10 = 350
14 × 100 = 1,400</td>
</tr>
</table>

Related facts Use knowledge of multiplying by 10 and 100 to scale times-table facts	… × … ones is equal to … ones so … × … tens is equal to … tens and … × … hundreds is equal to … hundreds. 	$3 \times 7 = 21$ $7 \times 3 = 21$ $3 \times 70 = 210$ $7 \times 30 = 210$ $3 \times 700 = 2{,}100$ $7 \times 300 = 2{,}100$

Grid Method 2digit x 1 digit 3digit x 1 digit	Show the link with arrays to first introduce the grid method.  4 rows of 10 4 rows of 3  Calculations 4 x 126	Children can represent the work they have done with place value counters in a way that they understand. They can draw the counters, using colours to show different amounts or just use circles in the different columns to show their thinking as shown below.  	

<table>
<tr>
<td>Multiply a 2 or 3-digit number by a 1-digit number

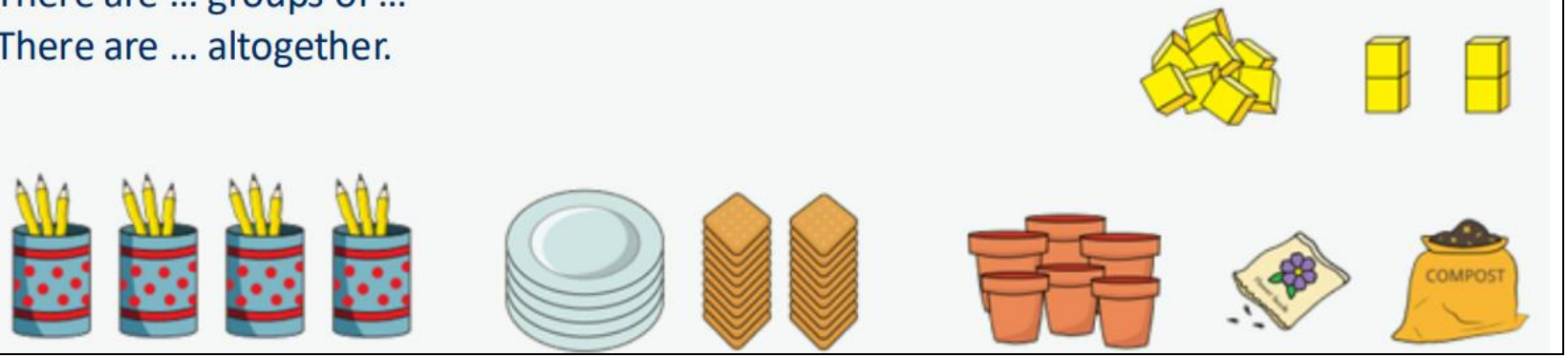
The short multiplication method is introduced for the first time.</td>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td>Scaling Children focus on multiplication as scaling (… times the size).</td>
<td>… is … times the size of …
7
7 7 7 7 7 7
A computer mouse costs £7
A keyboard costs 6 times as much.</td>
<td>7 x 6 = £42</td>
</tr>
<tr>
<td>Correspondence problems Encourage children to use tables to show all the different possible combinations.</td>
<td>For every … , there are … possibilities.
There are … × … possibilities altogether.

A pizza company offers a choice of 5 toppings and 3 bases.

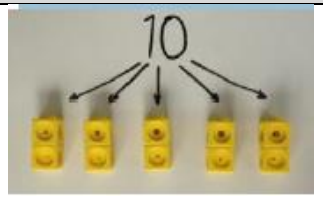
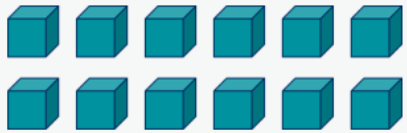
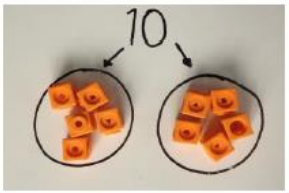
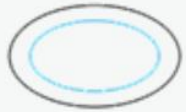
5 × 3 = 15

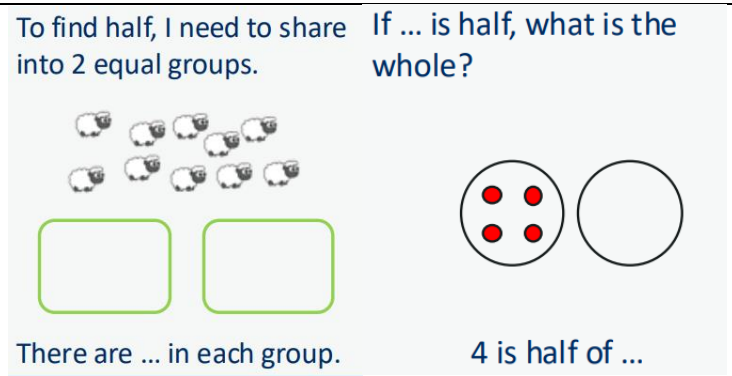
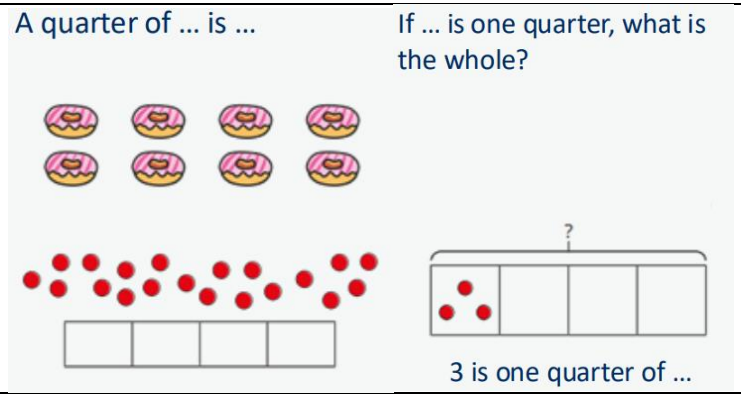
<table>
<tr><th></th><th>Deep pan</th><th>Italian</th><th>Thin</th></tr>
<tr><td>Cheese</td><td>C DP</td><td>C I</td><td>C Th</td></tr>
<tr><td>Mushroom</td><td>M DP</td><td>M I</td><td>M Th</td></tr>
<tr><td>Vegetable</td><td>V DP</td><td>V I</td><td>V Th</td></tr>
<tr><td>Chicken</td><td>C DP</td><td>C I</td><td>C Th</td></tr>
<tr><td>Tuna</td><td>T DP</td><td>T I</td><td>T Th</td></tr>
</table>
</td>
<td></td>
</tr>
</table>

Reception Division

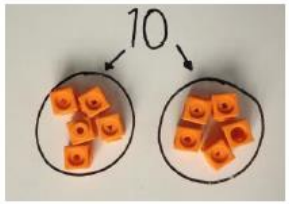
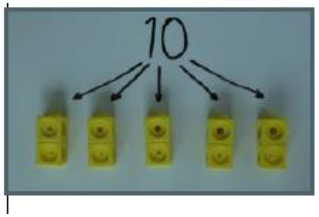
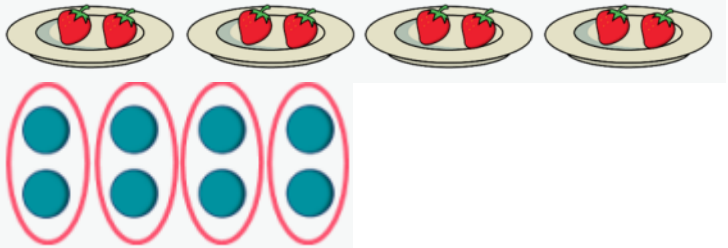
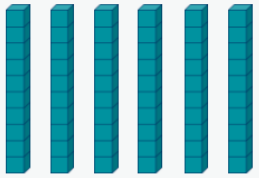
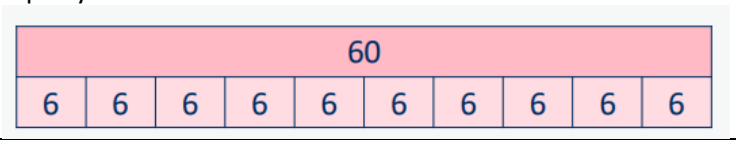
Skill	Key Representations
Sharing Provide practical activities such as sharing items during snack time. Encourage children to check whether items have been shared fairly (equally).	There are … altogether. They are shared equally between … groups. 
Grouping Provide opportunities to make equal groups when tidying up or during snack time. Encourage children to check that each group has the same amount.	There are … groups of … There are … altogether. 

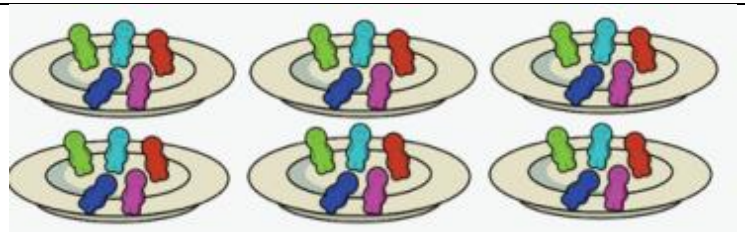
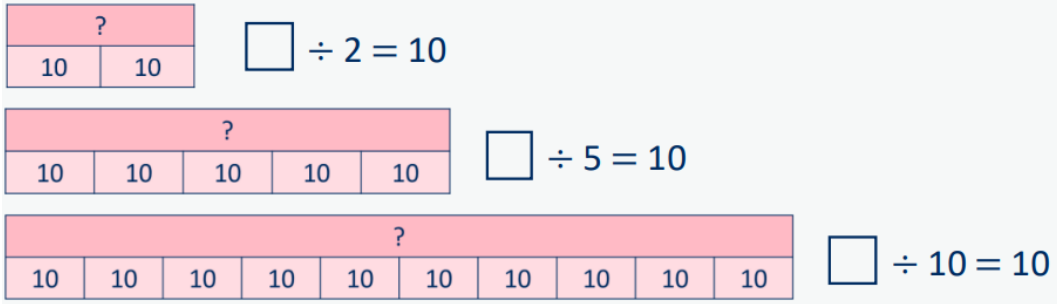
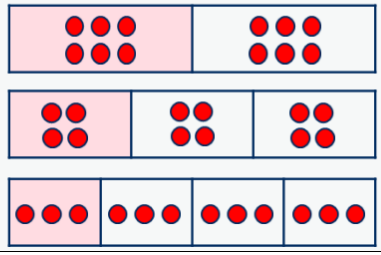
Year 1 Division

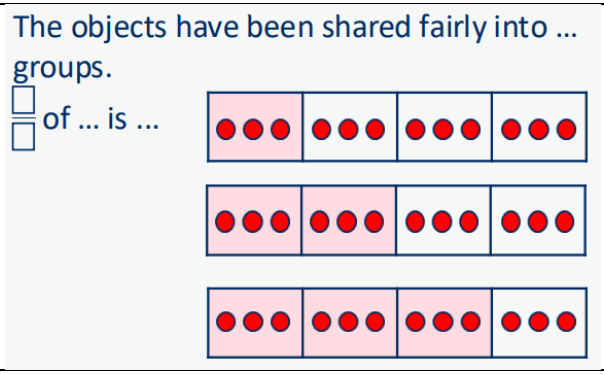
Skill	Concrete	Pictorial	Abstract
Make equal groups- grouping Encourage children to physically move objects into equal groups. They can also circle equal groups when using pictures.		There are … altogether. How many groups of … can you make?  	Take … cubes. Make equal groups.  There are … groups of …
Make equal groups – sharing Encourage children to check that the objects have been shared fairly and each group is the same.	   I have 10 cubes, can you share them equally in 2 groups?	… have been shared equally between… There are … on/in each …     	

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.		
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.		

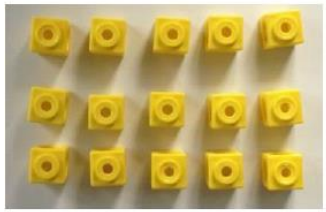
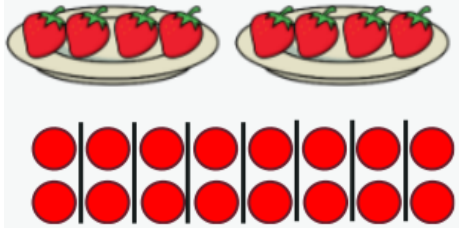
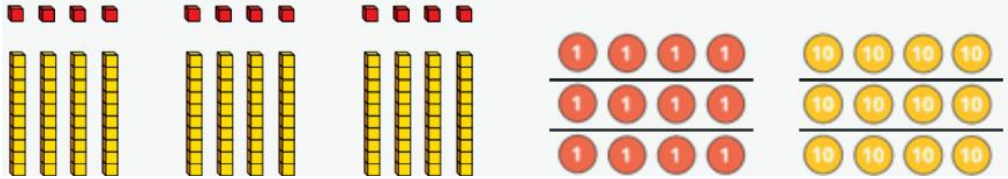
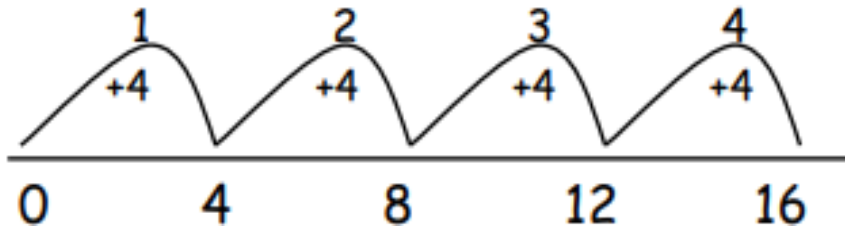
Year 2 Division

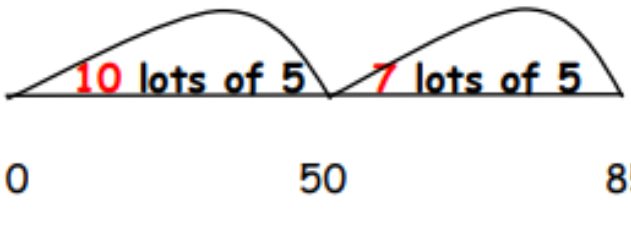
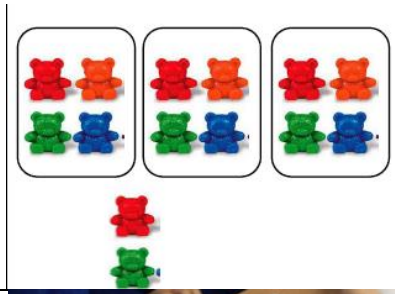
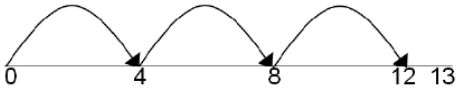
Skill	Concrete	Pictorial	Abstract
Divide by 2 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts and halving.	   I have 10 cubes, can share them equally in 2 groups? 	There are … equal groups of 2 … ÷ 2 = …  … shared equally between 2 is … Half of … is … … ÷ 2 = …  4 × 2 = 8 8 ÷ 2 = 4 	$8 \div 2 = 4$
Divide by 10 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	 *Sharing and grouping*	 There are … equal groups of 10 … …shared equally between 10 is … 	60 ÷ 10 = 6

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… … shared equally between is …	30 ÷ 5 = 6
Missing numbers Bar models are useful to show the link between multiplication and division.	… divided by 2/5/10 is equal to … 		
Unit fractions In Y2 the focus is on finding 1/2 , 1/4 and 1/3		The objects have been shared fairly into … groups. $\frac{1}{\square}$ of … is … 	¼ of 12 = 3

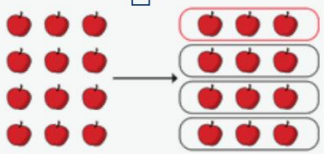
Non-unit fractions In Y2 the focus is on finding 2/4 and ¾.			¾ of 12 =9

Year 3

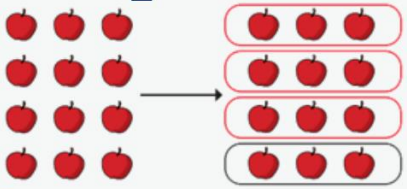
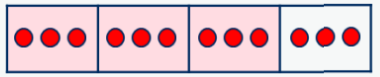
Skill	Concrete	Pictorial	Abstract
Divide by 3, 4 and 8. (Sharing and Grouping)	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15		$16 \div 8 = 2$ $8 \div 4 = 2$
Related facts Link to known times-table facts.	… ÷ … is equal to …, so … tens ÷ … is equal to … tens. 		$12 \div 3 = 4$ $120 \div 3 = 40$
Divide a 2-digit number by a 1-digit number (chunking)			16 ÷ 4 = 4

<table>
<tr>
<td>Divide a 2-digit number by a 1-digit number (just beyond times tables) (chunking)</td>
<td colspan="2"> 
</td>
<td>85÷5 = 17</td>
</tr>
<tr>
<td>Division with remainders (within times tables)</td>
<td>14 ÷ 3 =
Divide objects between groups and see how much is left over.
  </td>
<td>Jump forward in equal jumps on a number line then see how many more you need to jump to find a remainder.
 

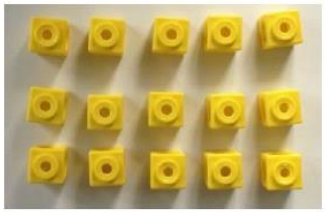
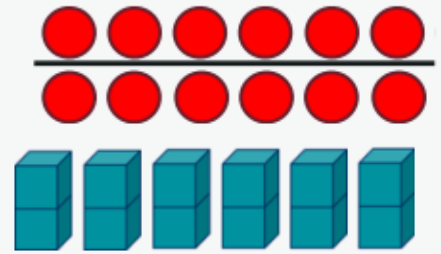
Draw dots and group them to divide an amount and clearly show a remainder.
  </td>
<td>Complete written divisions and show the remainder using r.

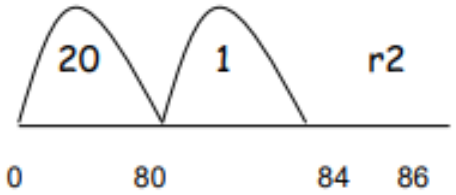
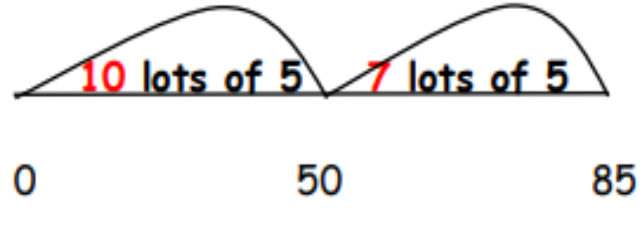
17 ÷ 4 = 4r1</td>
</tr>
<tr>
<td>Unit fractions of a set of objects
Bar models are useful to show the link between division and fractions, for example, dividing by 3 and finding a third.</td>
<td>  </td>
<td>The whole is divided into … equal parts.
Each part is $\frac{1}{\square}$ of the whole.
 
$\frac{1}{4}$ of 12 apples is 3 apples.</td>
<td>$\frac{1}{4}$ of 12 is 3

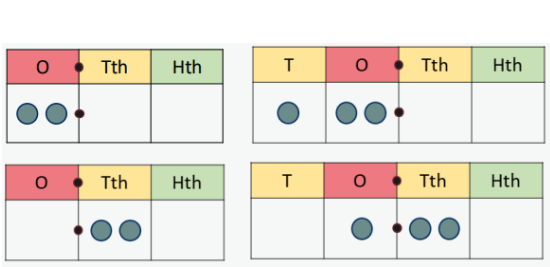
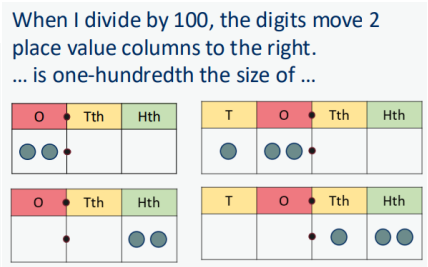
$\frac{1}{3}$ of 36 is 12</td>
</tr>
</table>

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.	$\frac{3}{4}$ of 12 is 9  $\frac{2}{3}$ of 36 is 24 

Year 4

Skill	Concrete	Pictorial	Abstract
Division facts to 12 × 12 Encourage children to compare the grouping and sharing structures of division and to make links with times-table facts.	 Link division to multiplication by creating an array and thinking about the number sentences that can be created. Eg 15 ÷ 3 = 5 5 x 3 = 15 15 ÷ 5 = 3 3 x 5 = 15	 	$2 \times 6 = 12$ $12 \div 6 = 2$
Divide a number by 1 and itself Children may try to divide a number by zero and it should be highlighted that this is not possible.		When I divide a number by 1, the number remains the same. 5 shared between 1 is 5  There are **5** groups of 1 in 5  When I divide a number by itself, the answer is 1 5 shared between 5 is 1  There is **1** group of 5 in 5 	$5 \div 5 = 1$ $5 \div 1 = 5$

Related facts Link to known times-table facts.	… ÷ … is equal to … so … tens ÷ … is equal to … tens and … hundreds ÷ … is equal to … hundreds. 	21 ÷ 7 = 3 210 ÷ 7 = 30 2,100 ÷ 7 = 300 21 ÷ 3 = 7 210 ÷ 3 = 70 2,100 ÷ 3 = 700
Division with remainders (just beyond times tables)		Complete written divisions and show the remainder using r. 86 ÷ 4 =21r2
Divide a 2-digit number by a 1-digit number (just beyond times tables) (chunking)		85÷5 = 17

Divide by 10 and 100 Encourage children to notice that dividing by 100 is the same as dividing by 10 twice.	When I divide by 10, the digits move 1 place value column to the right. … is one-tenth the size of …   	2 ÷ 10 = 0.2 12 ÷ 10 = 1.2 2 ÷ 100 = 0.02 12 ÷ 100 = 0.12