River Bank

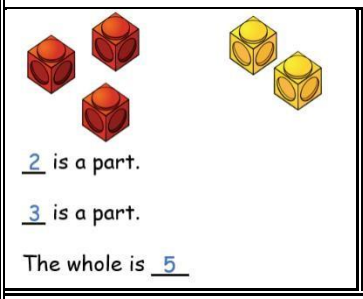
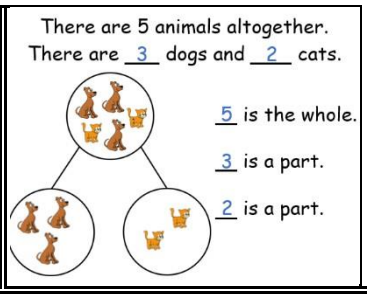
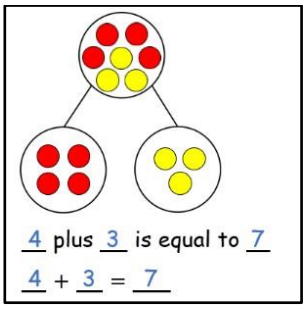
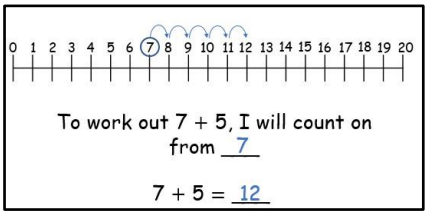
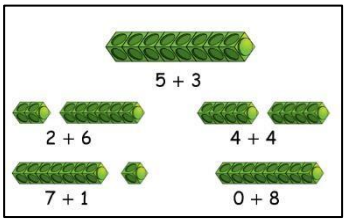
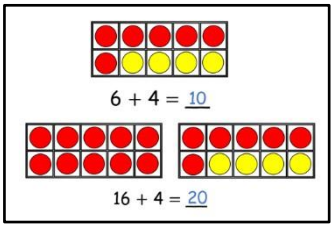
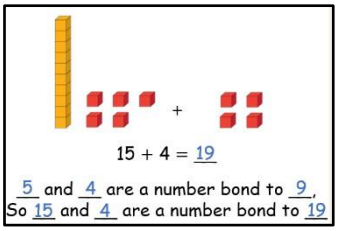
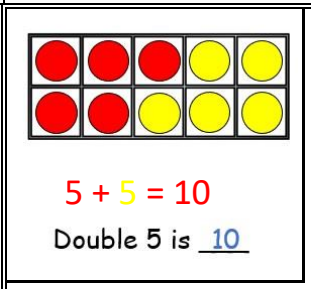
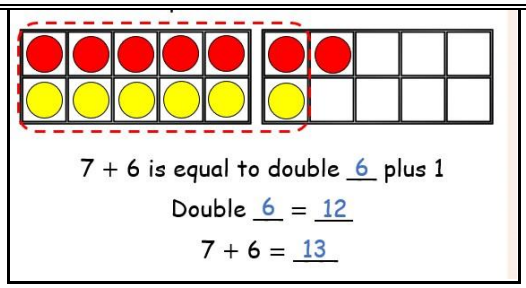
INSPIRE · EMPOWER · ACHIEVE

Calculation policy 2023

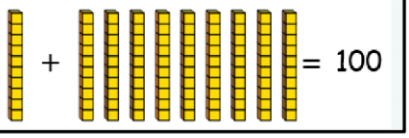
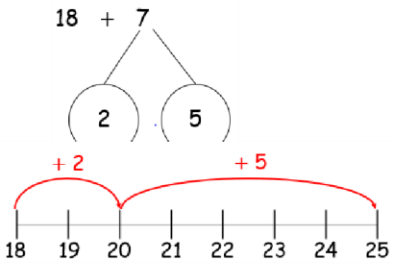
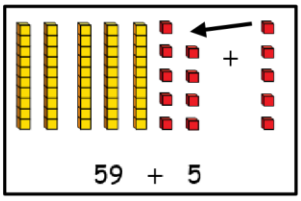
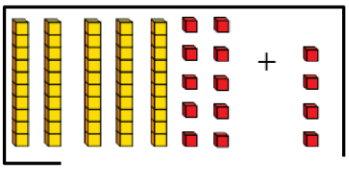
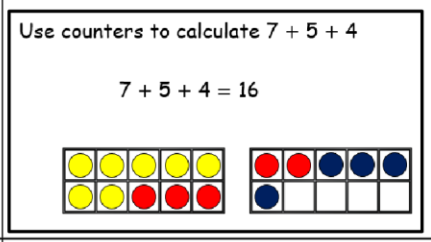
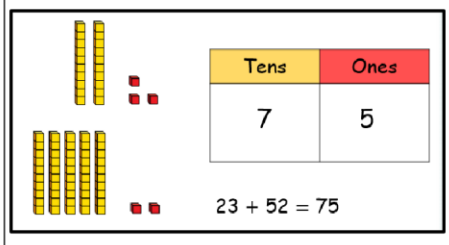
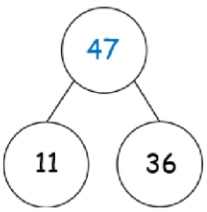
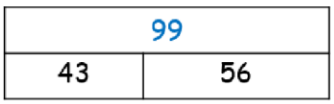
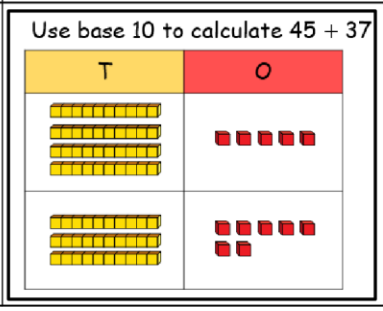
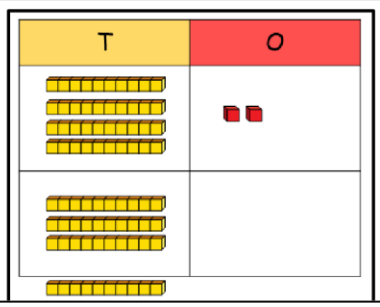
River Bank Primary School

2023

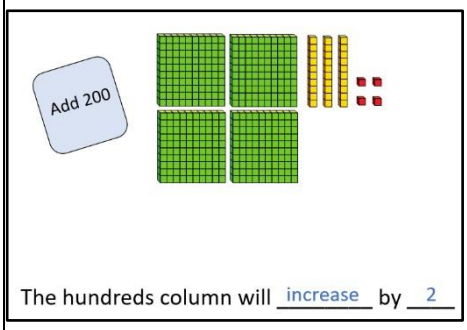
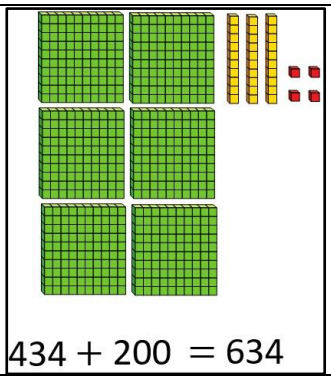
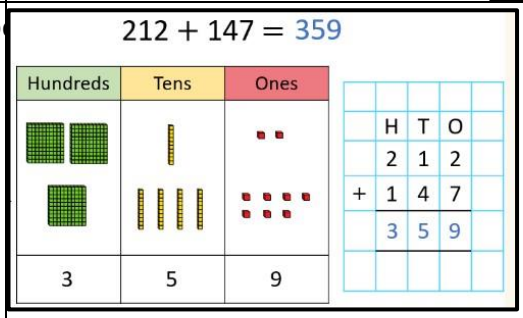
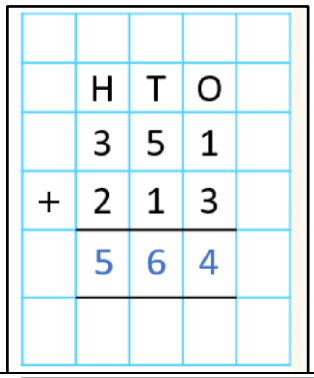
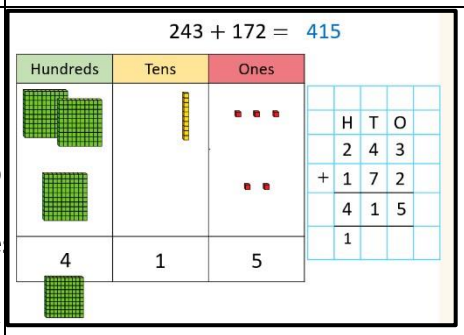
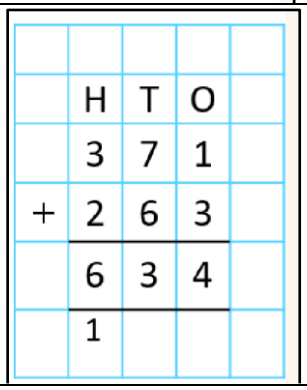
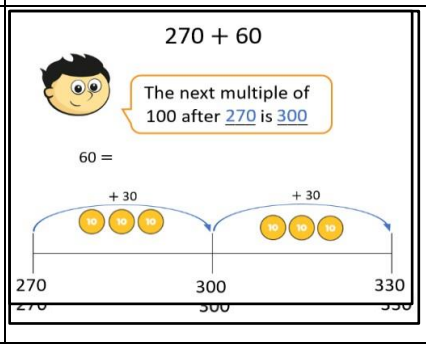
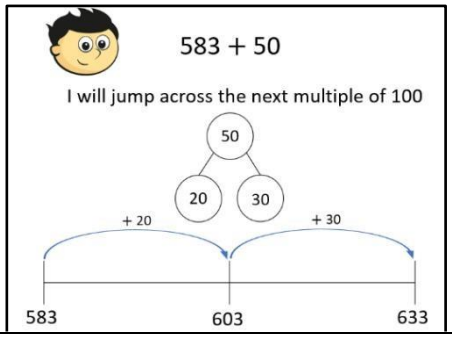
Addition - Year 1

Method	Example
Combining two parts to make a whole: a part whole model. Understand that the whole is bigger than the part.	  
Starting with the bigger number and counting on. They will choose the larger number (even when it is not first) and count on from there. Use number lines or store mentally and count on fingers.	   5 + 3 = 8 5 3
Finding and using number bonds to 10. Use these number bonds to work out addition questions within 20.	  
Using doubles and near doubles for addition. Know doubles for numbers to 10. Use near doubles to work out addition problems.	 

Addition – Year 2

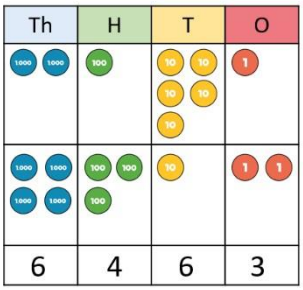
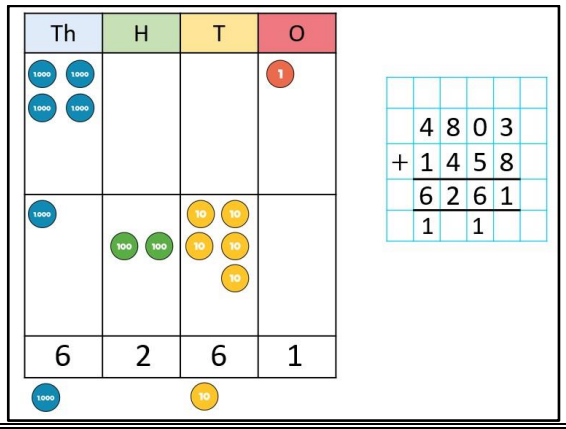
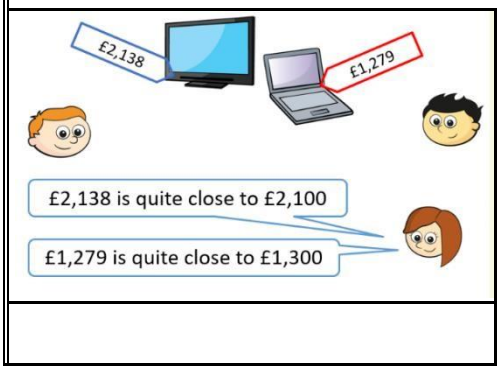
Method	Example
Use related facts to add tens. Use related facts to learn number bonds to 100 (using tens).	4 + 3 = 7 40 + 30 = 70  4 ones + 3 ones = 7 ones, So 4 tens + 3 tens = 7 tens This means that 40 + 30 = 70 1 + 9 = 10  10 + 90 = 100 
Using partitioning to add across 10. Partition the smaller number using knowledge of number bonds to 10.	   60 + 4 = 64 59 + 5 = 64
Adding 3 one-digit numbers. Use different coloured counters to add 3 one-digit numbers. Use number bonds to add 3 one-digit numbers.	 7 + 6 + 3 = 16 7 + 3 = 10 10 + 6 = 16
Adding 2 two-digit numbers not across 10. Partition the tens and ones first. Then, add the ones first and then then tens.	   11 + 36 = 47 43 + 56 = 99
Adding 2 two-digit numbers across 10. If a column goes across 10, we must exchange. In the example, *5 ones + 7 ones = 12 ones*. Ten ones will be exchanged for one ten.	  There are 8 tens and 2 ones. 80 + 2 = 82 45 + 37 = 82

Addition– Year 3

Method	Example
Add 10 and 100 by adding the correct number of digits to the specific column.	 
Add using the column metho when there is no exchanging needed.	 
Add threedigit numbers together using the column method. Use diennes to embed the concrete before moving onto the pictorial (counters) and abstract. When a column goe beyond 10, wæxchangethe digits e.g. 10 ones becomes 1 ten.	 
Add tens that go across 100.	 

Add a two-digit number and a three-digit number using the column method. Reinforce the importance of lining the place value columns correctly.	$252 + 23 = 275$ $+$ H T O 2 5 2 2 3 2 7 5 *105 + 87 = 192* H T O 1 0 5 $+$ 8 7 1 9 2 1 H T O 1 0 5 $+$ 8 7 1 9 2 1

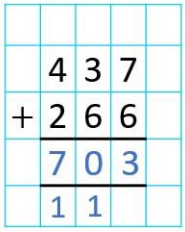
Addition – Year 4

Method	Example
Adding two four-digit numbers with no exchanging. Using place value counters to reinforce lining the columns correctly.	2,151 + 4,312 = 6,463  2 1 5 1 + 4 3 1 2 6 4 6 3 5 2 3 1 + 3 5 8 5 5 8 9
Adding two four-digit numbers with exchanging.	3,635 + 4,572 = 8,206  4 8 0 3 + 1 4 5 8 6 2 6 1 1 1 3 6 3 5 + 4 5 7 1 8 2 0 6 1 1
Using rounding to estimate addition questions.	 2,138 + 1,279 2,100 + 1,300 = 3,400

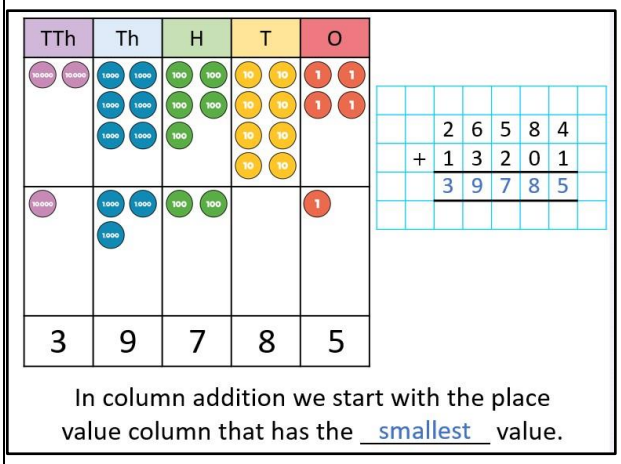
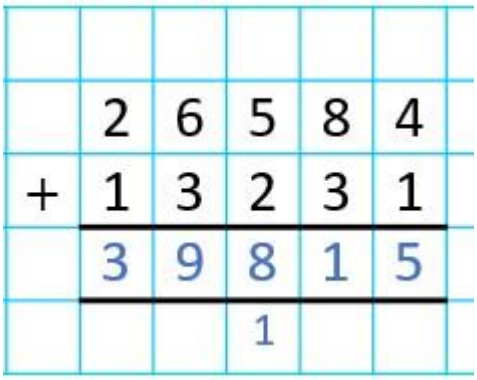
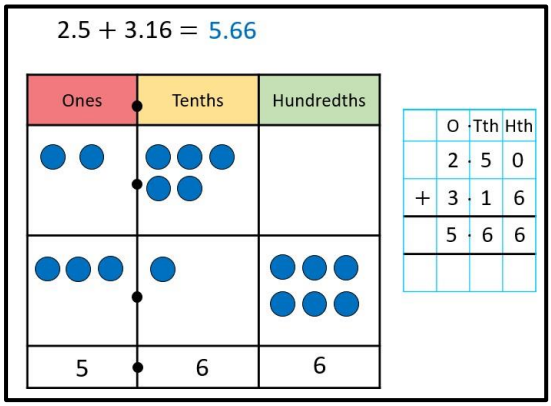
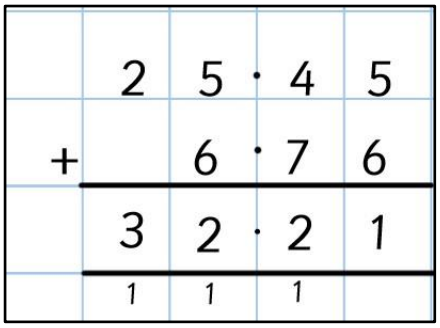
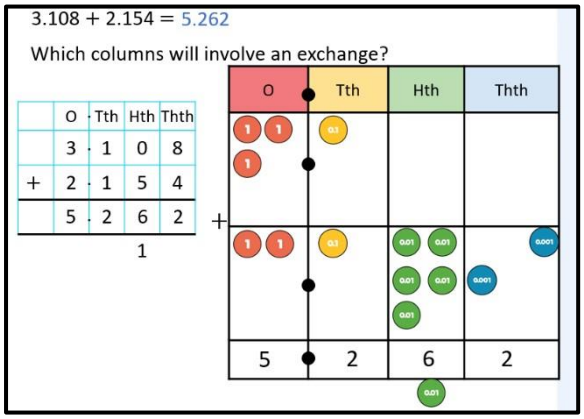
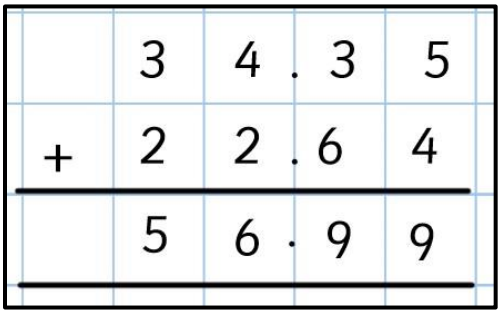
£437 rounded to the nearest 100 is £400

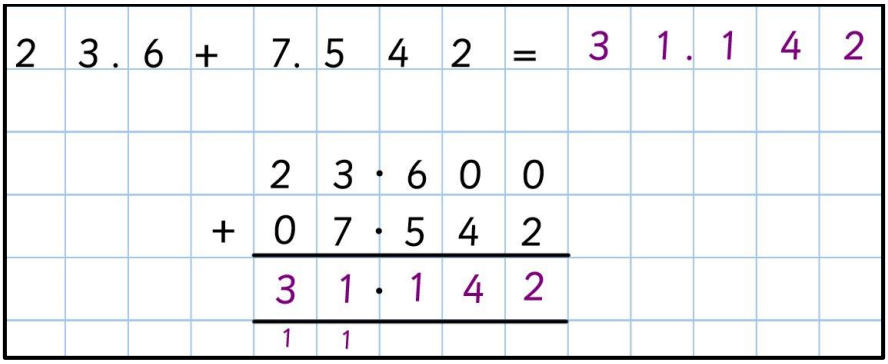
£266 rounded to the nearest 100 is £300

The estimated answer is
£400 + £300 = £700

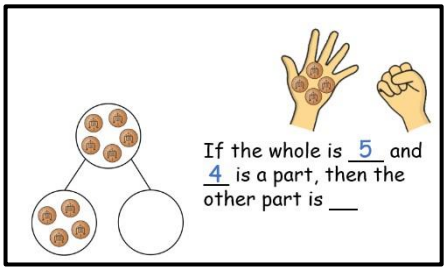
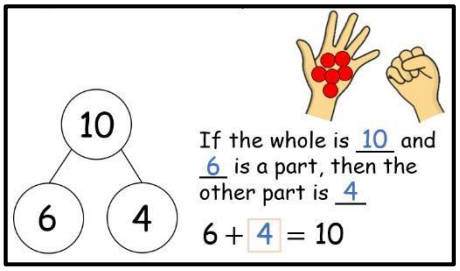
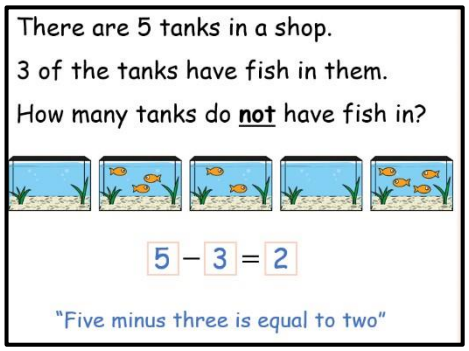
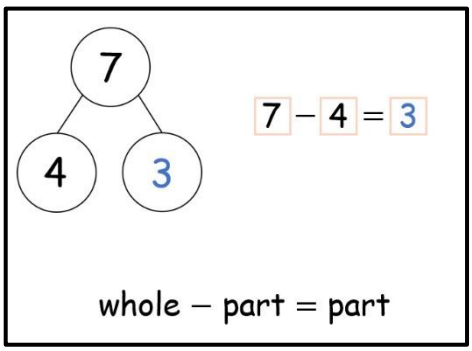
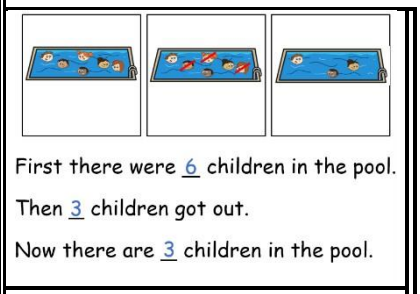
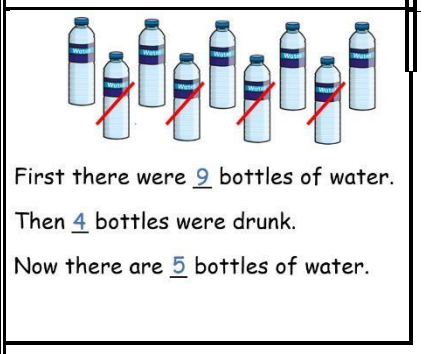
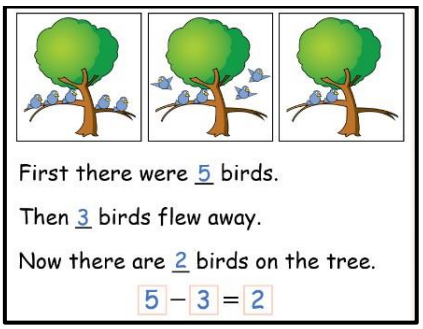
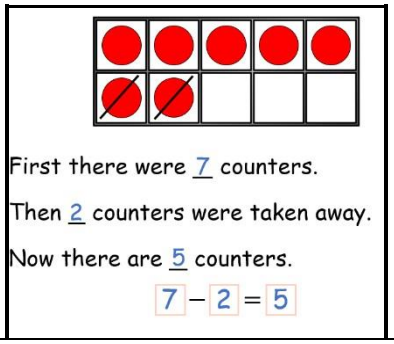


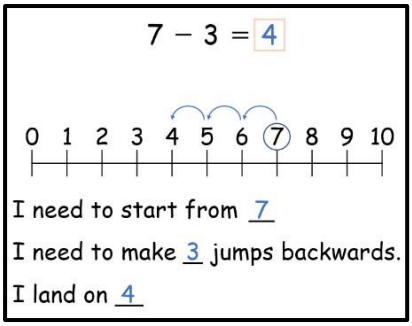
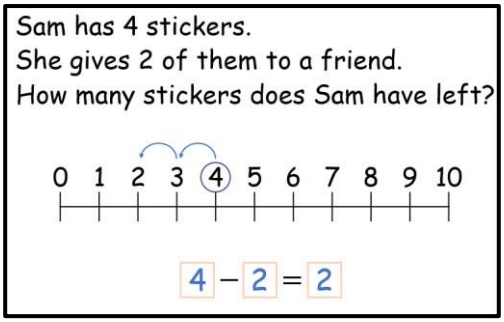
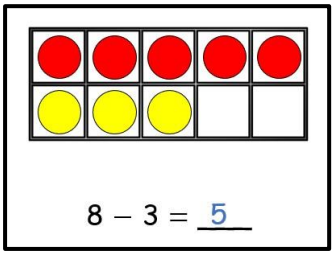
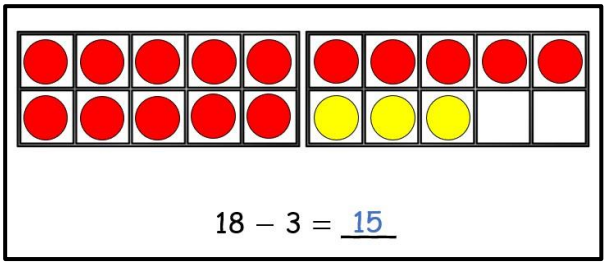
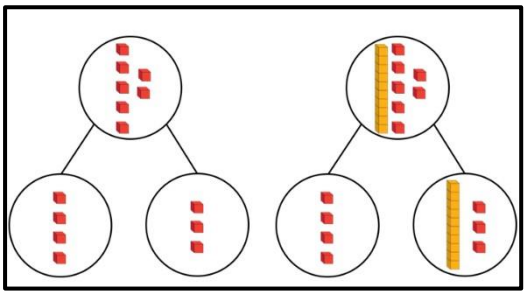
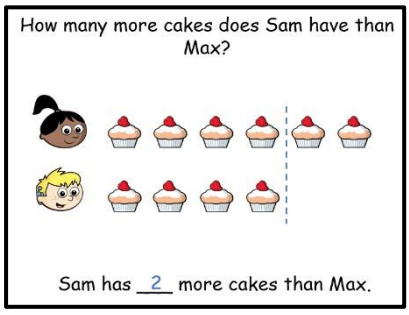
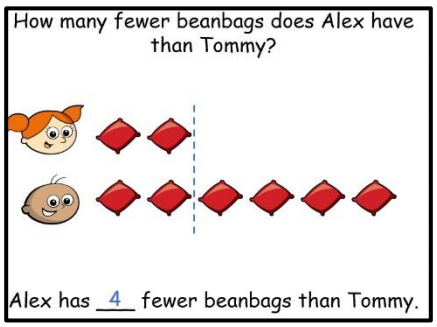
Addition – Year 5 and 6

Method	Example
Add numbers with more than four digits with and without exchanging. Always with the place value column with the smallest value.	 
Add decimals with the same number of digits and with different numbers of digits. Lineup the place value columns correctly and starting with the place value column with the smallest value.	 25.45 + 6.76 = 32.21   34.35 + 22.64 = 56.99 

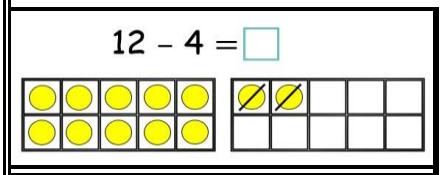
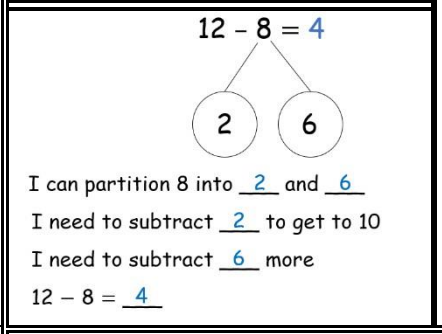
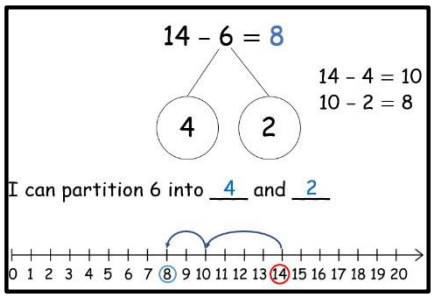
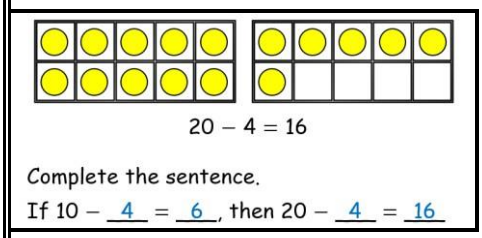
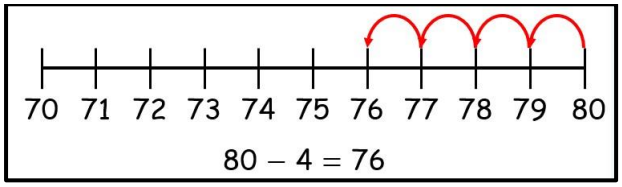
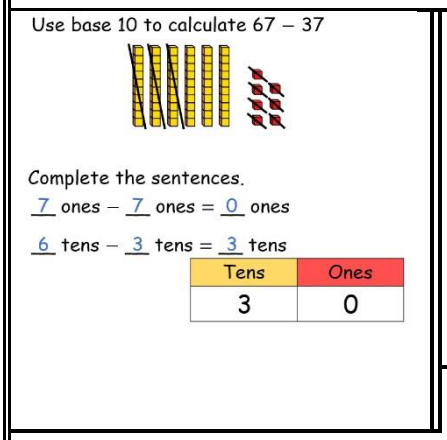
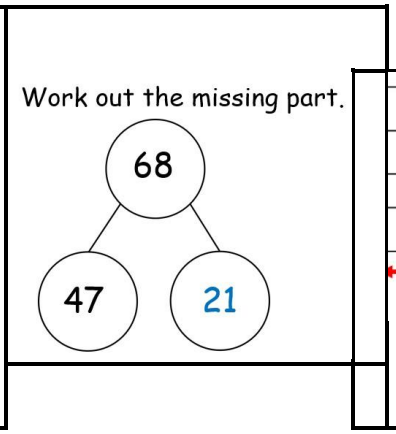
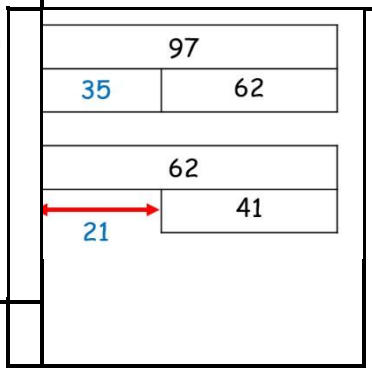
Adding decimals up to the thousandth's column. Line the place value columns correctly. Put place holders into the empty columns. Exchange if a column goes across 10.	

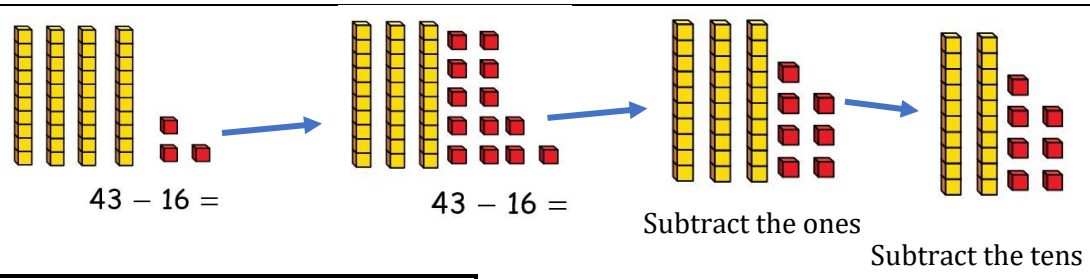
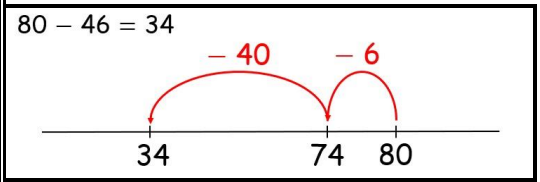
Subtraction Year 1

Method	Example
Find a part – understand that whole is made up of parts. If we have the whole and one part, we can find the missing part. This will be done using number bonds rather than formal subtraction.	 
Finding a part as subtraction. Still using number bonds to find a part, they will represent them using a subtraction symbol. Children will understand that whole – part = part.	 
Subtraction as taking away. This will be the first time they're introduced to subtraction as 'taking away'. This will be done first without the subtraction symbol. Children will be taught to 'cross out' what they are taking away. In step 2, the subtraction symbol will be formally used.	Step 1   Step 2  

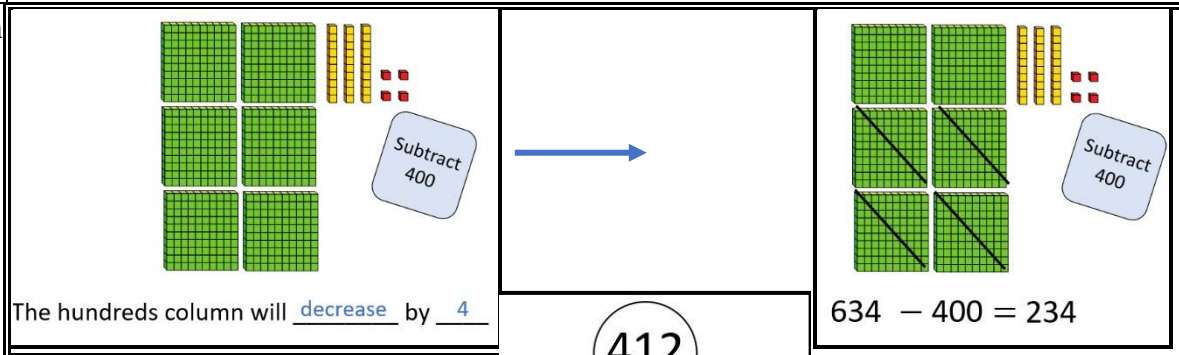
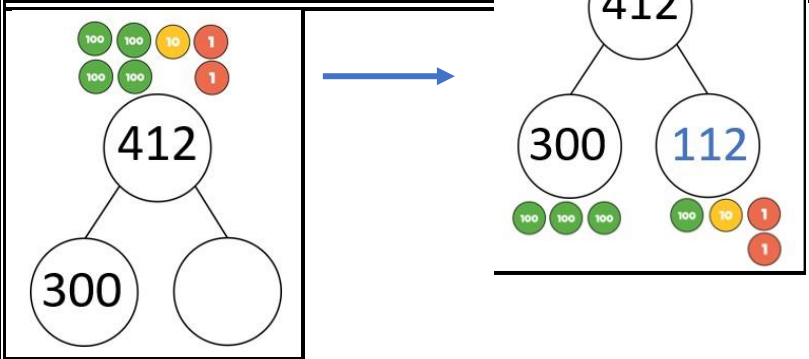
Subtraction using a number line – Children will be taught to count back from the bigger number.	 
Using number bonds to subtract within 20.	  
Subtracting by finding the difference. The children will be introduced to vocabulary such as how many fewer, how many more and find the difference.	 

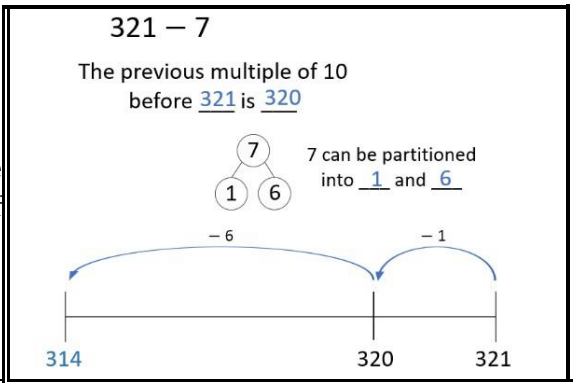
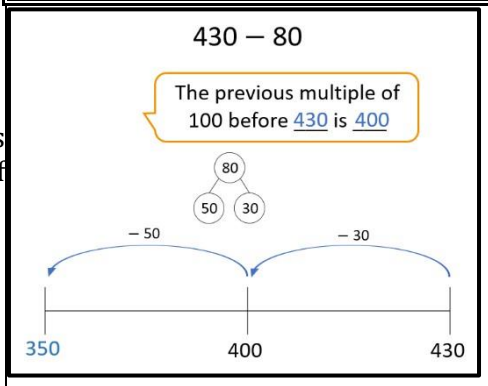
Subtraction Year 2

Method	Example
Subtract across 10. Children will use their number bonds to partition numbers subtract across 10. 12 – 4 = 12 – 2 = 10 10 – 2 = 8	  
Subtract from 10 – Use number bonds to ten to subtract from multiples of ten.	 
Subtract two 2-digit numbers without crossing ten – do this by partitioning the number into tens and ones (always start subtracting with the ones)	  

Subtract two 2-digit numbers across ten. To do this, you will need to exchange a ten into 10 ones. This can be done practically using base ten (diennes). Use a number line to subtract the ones of the smaller number before then subtracting the tens.	 

Year 3 – Subtraction

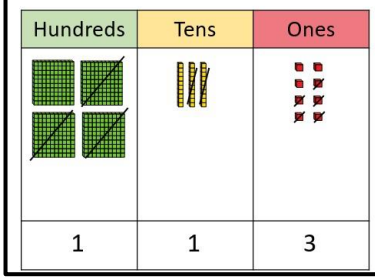
Method	Example
Subtract 100 from a given number. Children will understand that only the hundreds column will change. Encourage them to use their number bonds to subtract (e.g. 5-3 = 2 so 500 – 300 = 200)	 

Subtract 1 across ten in a 3digit number. Use a number line and knowledge of number bonds.		
Subtract 10 across 100. Use number lines and knowledge of number bonds. 430 – 60. The previous 100 is 400. 430 – 30 = 400 60 – 30 = 30 400 – 30 - 370		

Subtract two numbers without exchanging using a formal written method.

Place value columns must be lined up and always begin subtracting at the ones.

438 − 325 =



	H	T	O
	4	3	8
−	3	2	5
	1	1	3

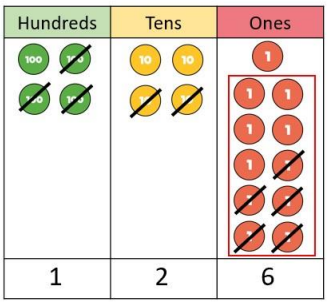
Subtracting with exchanging.

Children must know to start with the ones.

If the digit in the top number is smaller than the digit below, you must exchange.

Use this method to subtract a 2-digit number from a 3-digit number.

451 − 325 = 126



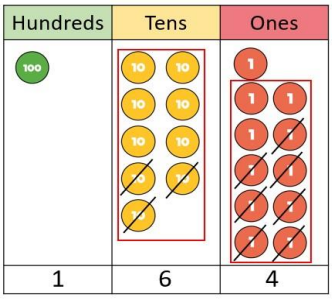
	H	T	O
	4	5	11
−	3	2	5
	1	2	6

1 – 5 we cannot do.
So we must exchange one of the tens into 10 ones.
Now we do 11 – 5 = 6.

Then 4 tens – 2 tens = 2 tens.

4 hundreds 3 hundreds = 1 hundred.

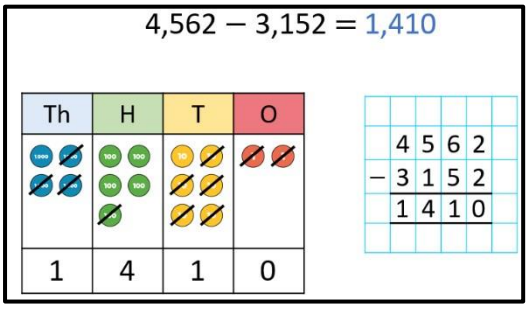
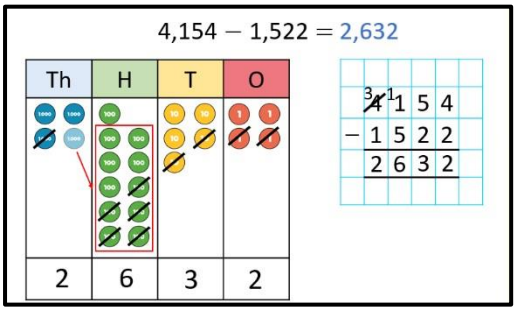
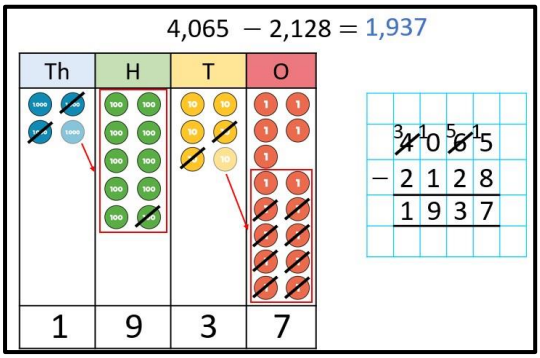
201 − 37 =



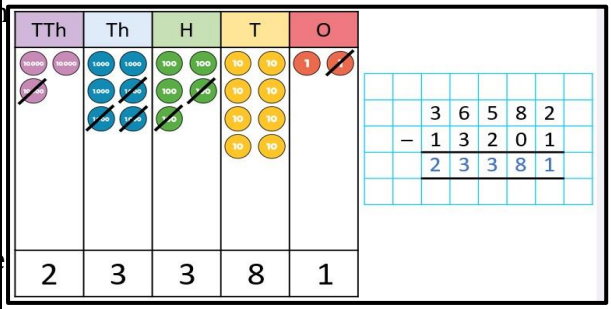
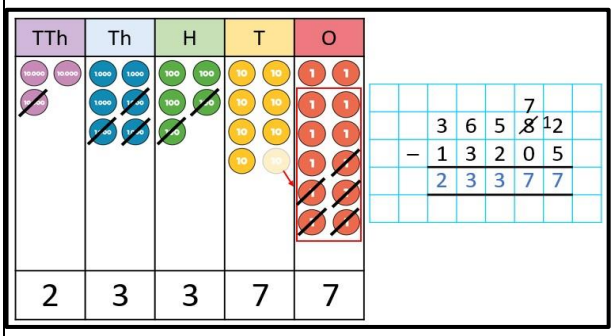
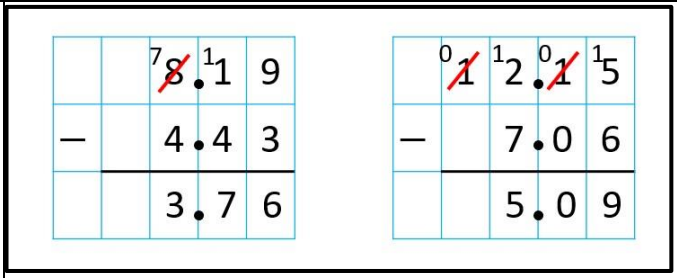
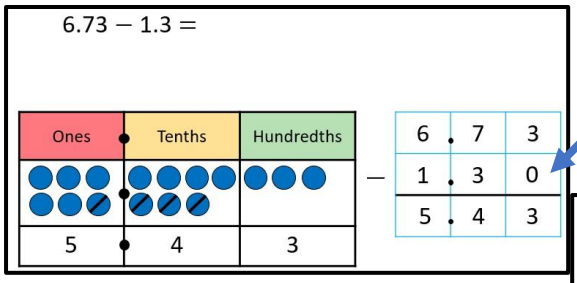
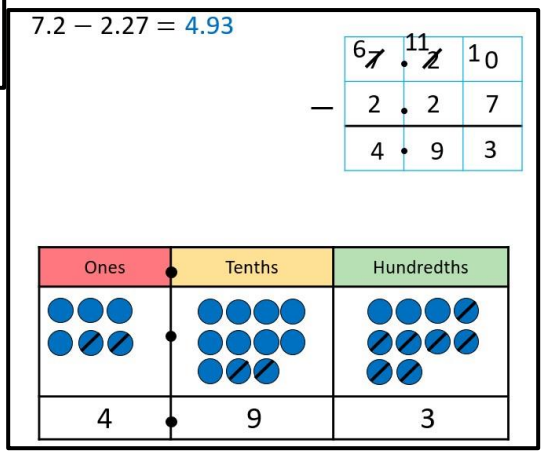
	H	T	O
	1	9	11
—		3	7
	1	6	4

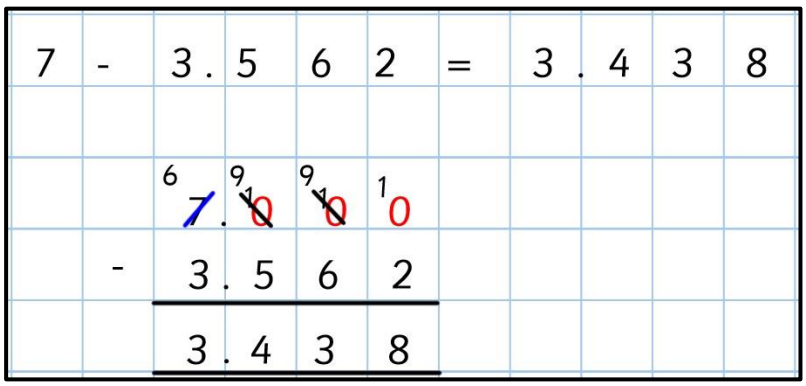
When there is a place holder on the top line, you exchange from the next digit on the left.

Year 4– Subtraction

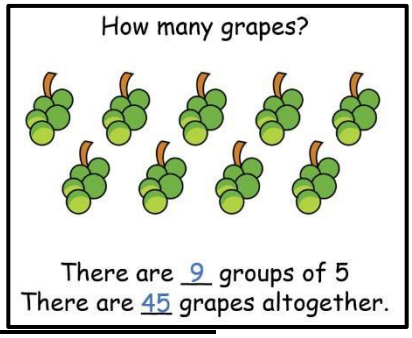
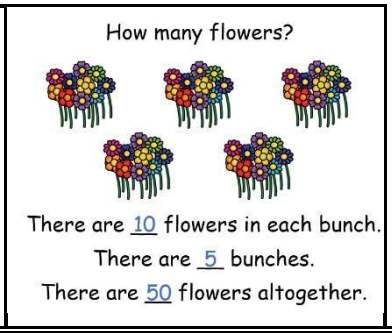
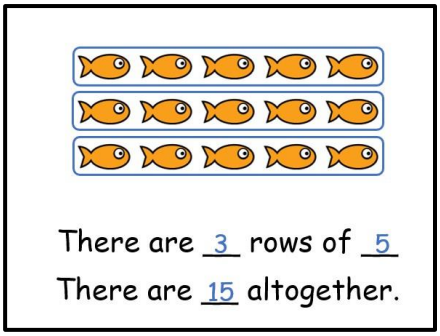
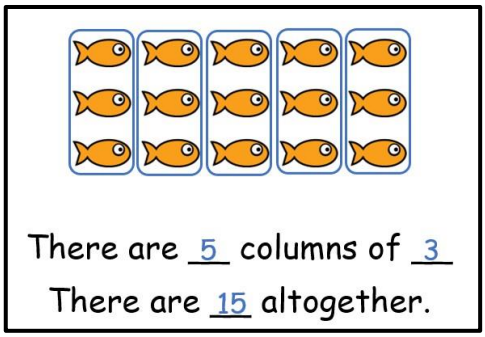
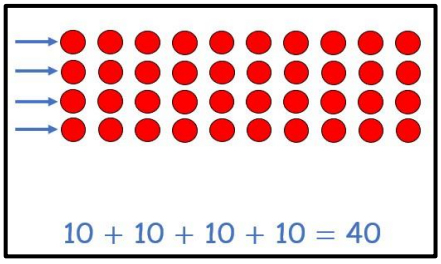
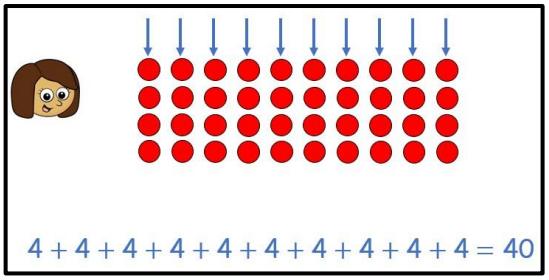
Method	Example
Subtract two four-digit numbers without exchanging, with exchanging and with more than one exchange.	  

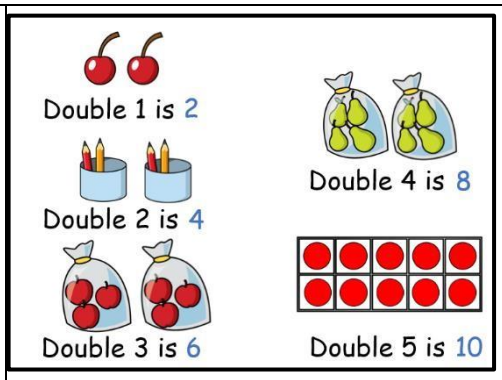
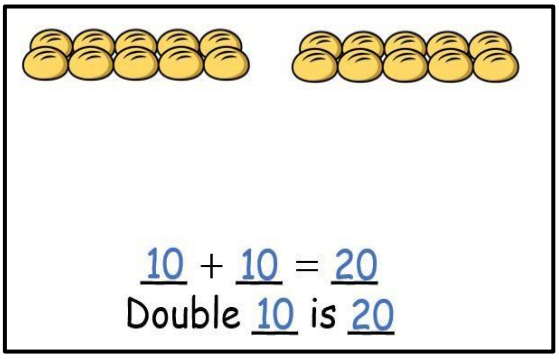
Year 5 and 6– Subtraction

Method	Example
Subtract whole numbers with more than four digits with and without exchanging. Line the place value columns up correctly and begin subtracting in the place value column with the smallest value.	 
Subtract decimals with the same number of decimal places.	
Subtract decimals with different numbers of digits.	 Fill the empty columns with a placeholder. 

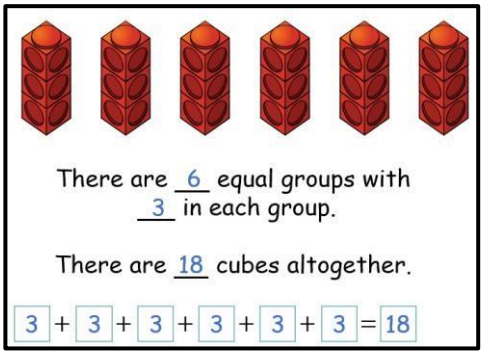
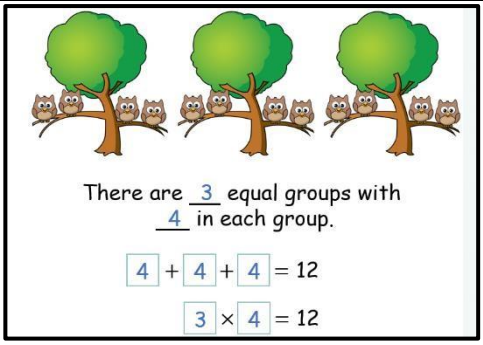
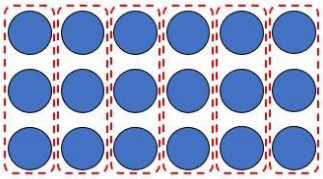
Subtract decimals from a whole number. Put placeholders into the empty columns so that there is an even number of digits. When there are multiple zeros, you must continue to exchange until you can subtract in the smallest value place value column.	

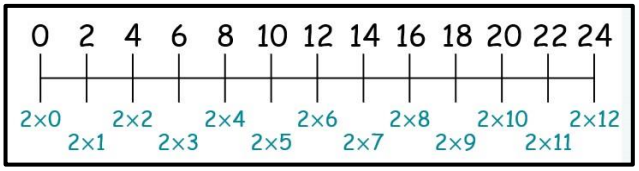
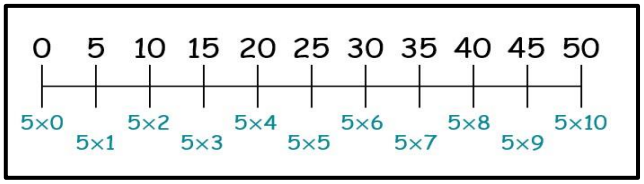
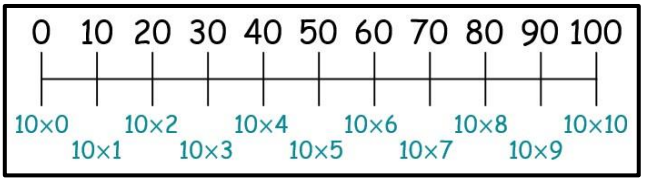
Year 1 – Multiplication

Method	Example
Children will count in groups of the same number of objects and add them.	  
Make arrays to support multiplication and to show multiplication as repeated addition.	   

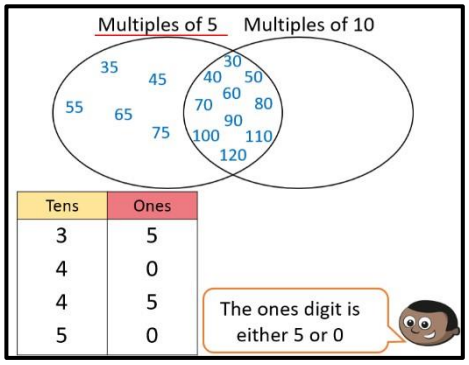
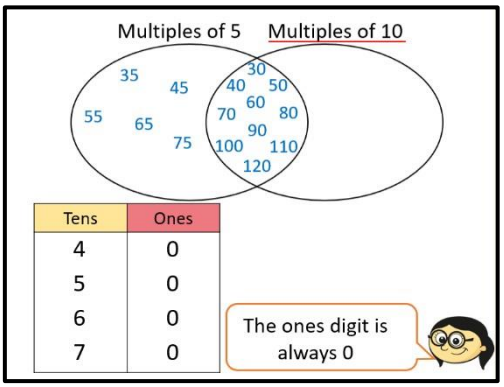
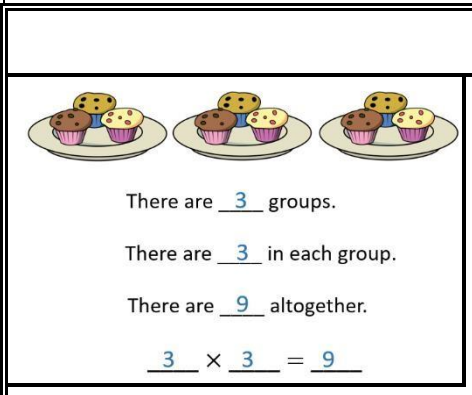
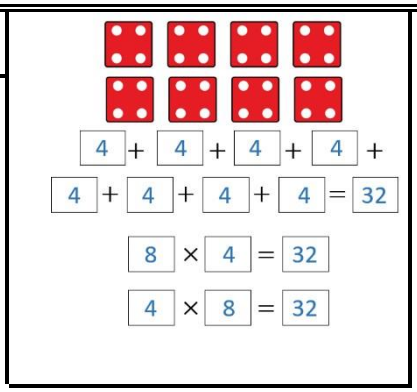
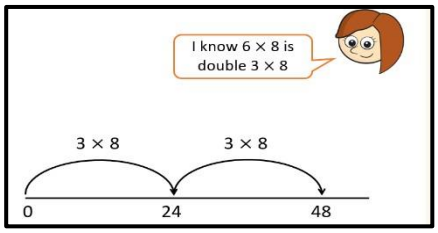
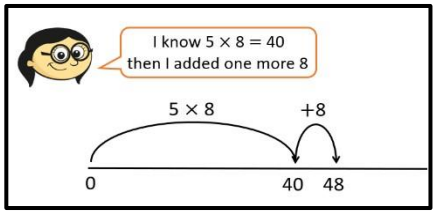
Making doubles and seeing them as two equal groups.	 

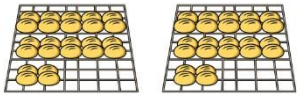
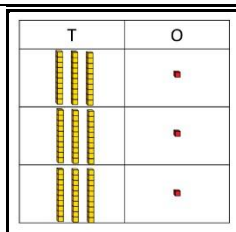
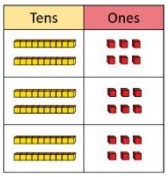
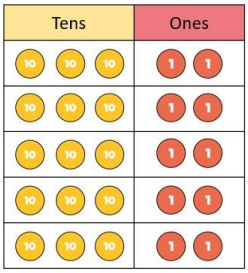
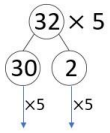
Year 2 multiplication

Method	Example
Identify and make equal groups. Know that 3 groups of 4 and 4 groups of 3 lead to the same total – introducing the concept of commutativity.	 There are 6 equal groups with 3 in each group. There are 18 cubes altogether. 3 + 3 + 3 + 3 + 3 + 3 = 18 6 + 6 + 6 = 18 There are 3 equal groups with 6 in each group. There are 18 altogether.
Using the multiplication symbol making the links between multiplication and repeated addition. Both repeated addition and multiplication sentences will be written.	 There are 3 equal groups with 4 in each group. 4 + 4 + 4 = 12 3 × 4 = 12  3 × 4 = 12 "3 lots of 4 is equal to 12" "3 groups of 4 is equal to 12" "3 multiplied by 4 is equal to 12"
Using arrays to show that multiplication is commutative.	 6 + 6 + 6 = 18 3 × 6 = 18 3 + 3 + 3 + 3 + 3 + 3 = 18 6 × 3 = 18

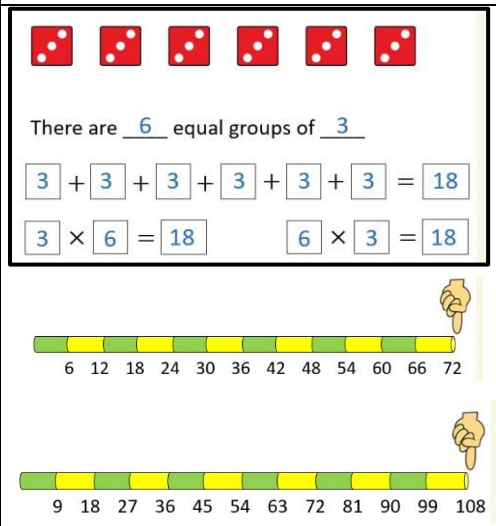
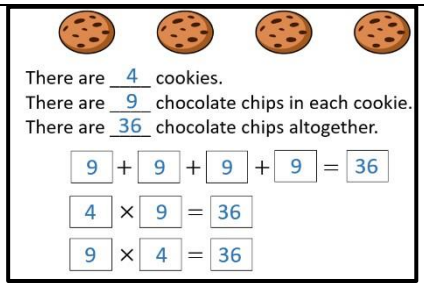
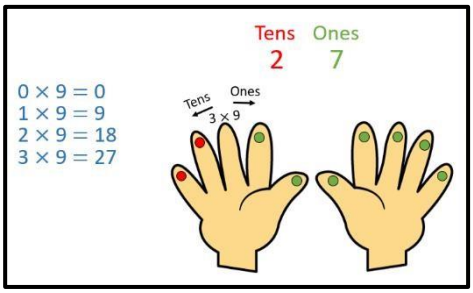
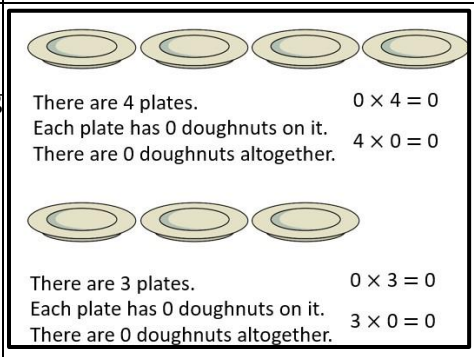
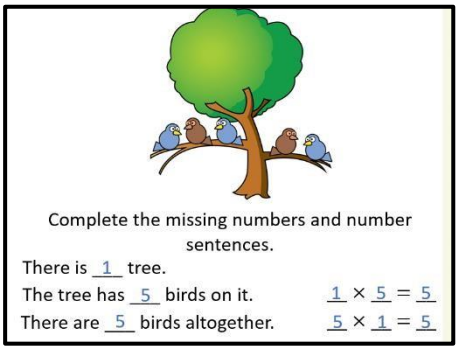
Learn the 2-, 5- and 10-times tables as multiplication.	  

Year 3 – Multiplication

Method	Example
Identifying multiples of 2, 5 and 10. Know that a multiple of 2 can be divided into 2 equal groups. Recognise that all even numbers are multiples of 2. Recognise that all numbers with a 5 or 0 in the ones column are multiples of 5. Recognise that all numbers with 0 in the ones column are multiples of 10.	 
Multiply by 3 and 4. Learning the 3- and 4-times tables.	 
Multiplying by 8 and learning the 8 times tables. Use links to other times tables to learn the 8 times tables. Knowing the 8 times tables are double the 4 times tables.	 

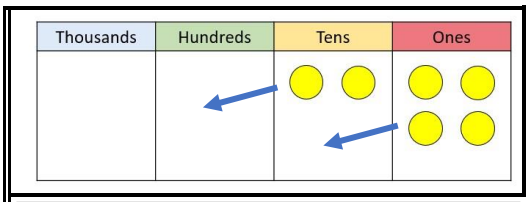
Multiply a 2-digit number by a 1-digit number with no exchanging. This will be done by partitioning the two-digit number and multiplying the tens and ones separately.	Each tray has 24 rolls. How many rolls are there in total?  $2 \times 20 = 40$ $2 \times 4 = 8$ 2 tens multiplied by 2 is equal to 40 4 ones multiplied by 2 is equal to 8 24 multiplied by 2 is equal to 48  $31 \times 3 = 93$ 3 tens multiplied by 3 is equal to 90 1 one multiplied by 3 is equal to 3 31 multiplied by 3 is equal to 93
Multiply a 2-digit number by a 1-digit number with exchanging. This will be done by partitioning the two-digit number and multiplying the tens and ones separately. The answers will then need adding together.	$26 \times 3 = 78$ 2 tens × 3 = 6 tens 6 ones × 3 = 18 ones $26 \times 3 = 60 + 18 = 78$ $26 \times 3 = 78$    $150 + 10 = 160$ $32 \times 5 = 160$

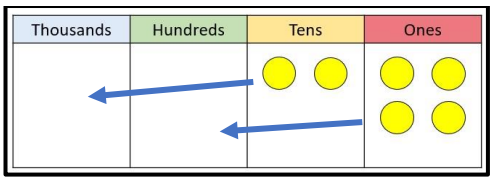
Multiplication – Year 4

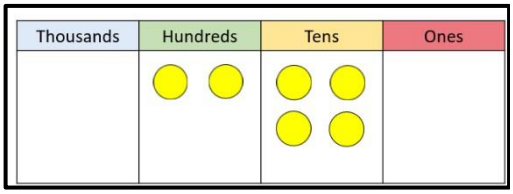
Method	Example
Multiply by 6 and 9 and learn the 6- and 9-times tables. Counting sticks to be used in the teaching of the times tables. Introduce the children to the finger trick for the 9 times tables.	  
Learn the 7,11 and 12 timetables.	7 14 21 28 35 42 49 56 63 70 77 84 11 22 33 44 55 66 77 88 99 110 121 132 12 24 36 48 60 72 84 96 108 120 132 144
Multiply by 1 and 0. Know that when multiplying by 0 the answer is always 0. Know that when we multiply by 1, the answer remains the same.	 
Multiply by 10 and 100	*24 x 10 = 240* *24 x 100 = 2400*

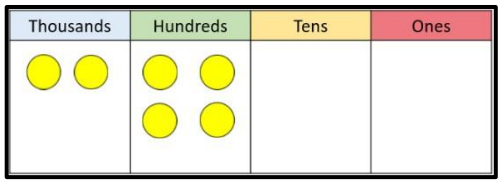
Know that when we multiply by 10, the digits shift one place value column to the left.

When multiplying by 100, the digits shift two place value columns to the left.









20 x 10 = 200

4 x 10 = 40

200 + 40 = 240

20

4 x

2,0

2,000

= 400

= 2,400

Multiply a 2-digit number by a 1-digit number.

Children to be taught the expanded method where each digit is partitioned and multiplied separately. Children also to be taught short multiplication with exchanging required.

	T	O	
	2	4	
×		4	
	1	6	(4 × 4)
	8	0	(4 × 20)
	9	6	

4 x 4 = 16

4 x 20 = 80

16 + 8 = 96

	T	O	
	2	4	
×		4	
	9	6	
	1		

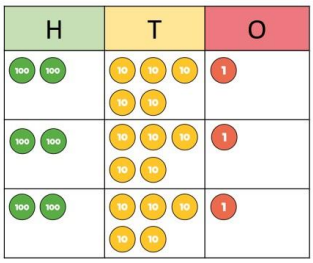
4 x 4 = 16 (6 goes into the ones column and 1 ten is exchanged)

4 x 2 = 8 (now add the exchanged digit.

8 + 1 = 9

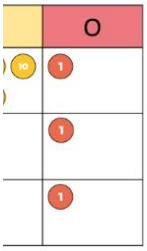
Multiply a 3-digit number by a 1-digit number.

251 × 3 =



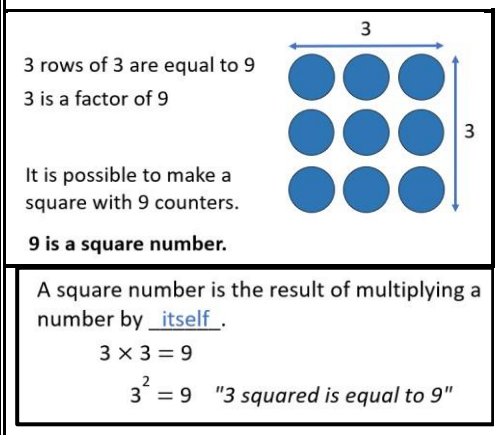
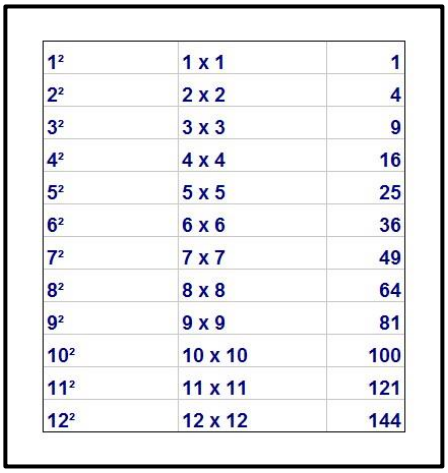
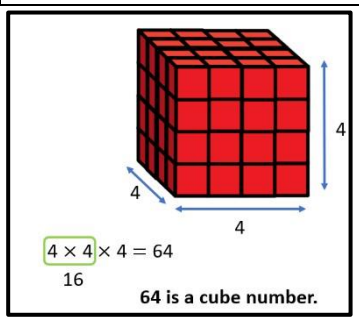
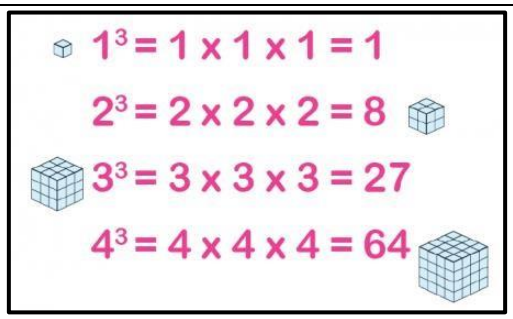
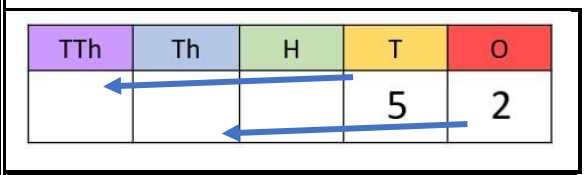
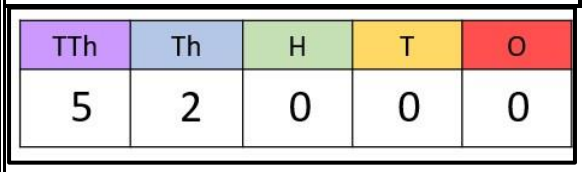
	H	T	O	
	2	5	1	
×			3	

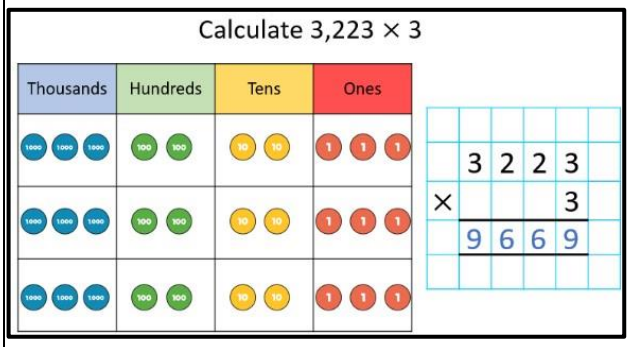
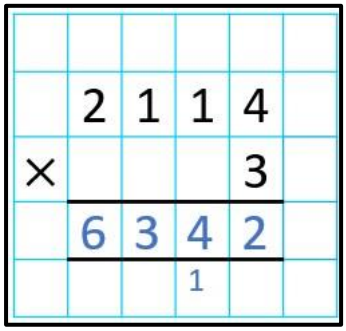
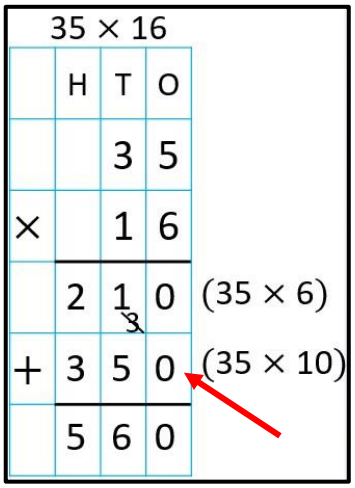
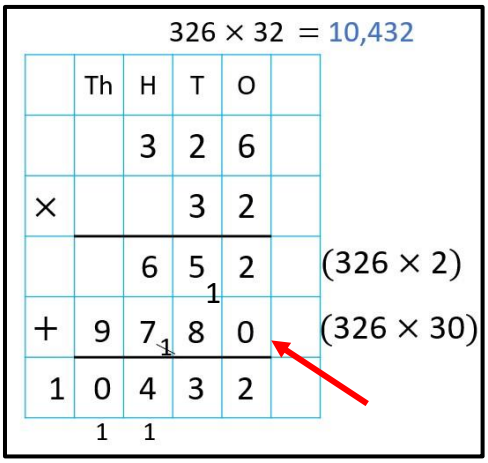
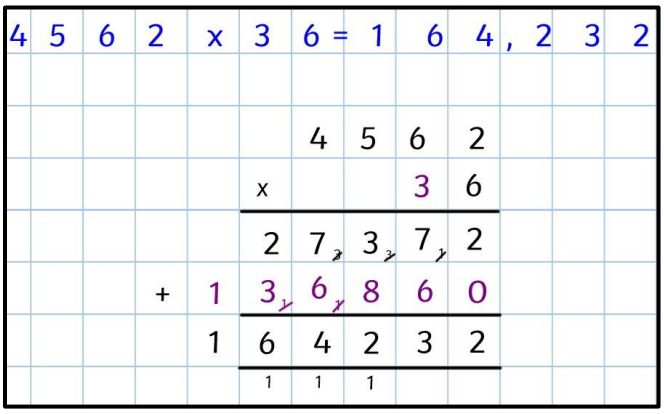
251 × 3 = 753



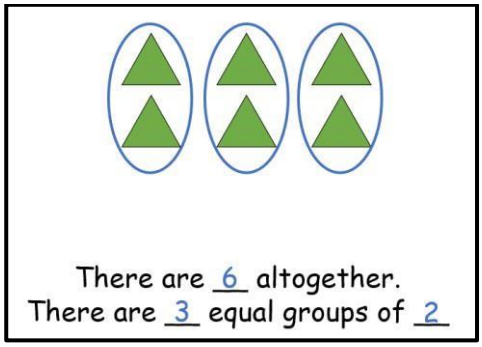
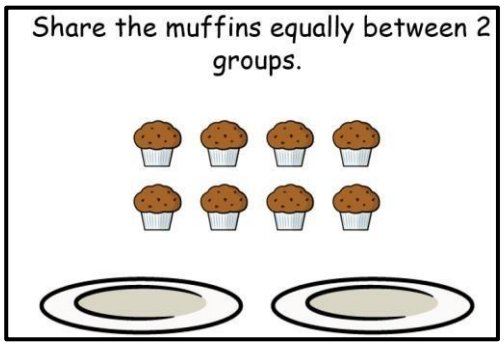
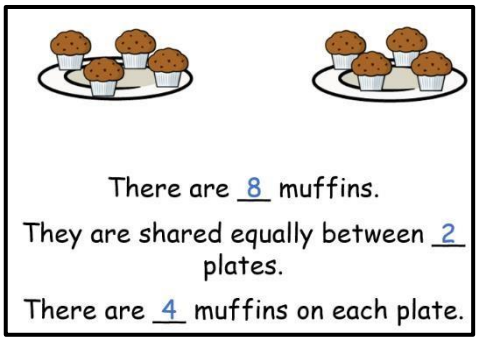
	H	T	O	
	2	5	1	
×			3	
	7	5	3	
	1			

Multiplication years 5 and 6

Method	Example
Understand square numbers. Use concrete objects to identify square numbers. Know that a square number is the result of multiplying a number by itself. Learn the square numbers up to 12 x 12.	 
Understand cube numbers. Know that a cube number is the result of multiplying a number by itself twice.	 
Multiply by 1,000. Know that when we multiply by 1000, we move the digits three place value columns to the left.	52 x 1,000 = 52,000  

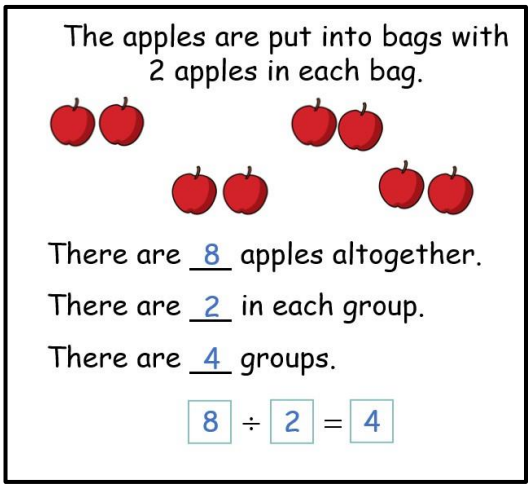
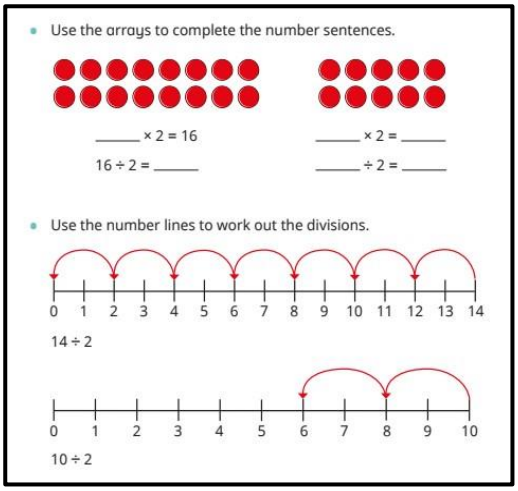
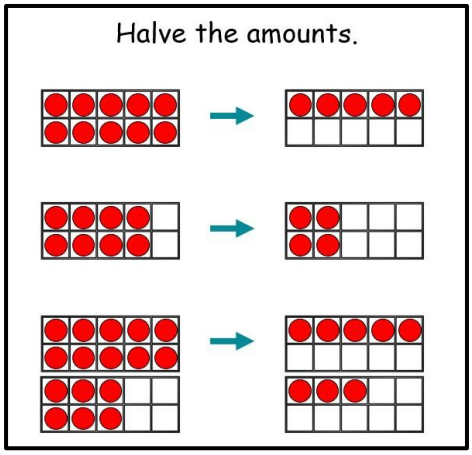
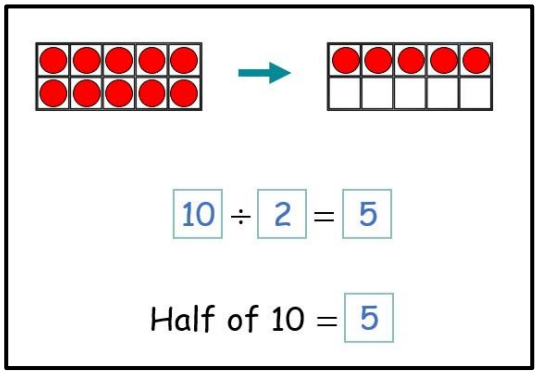
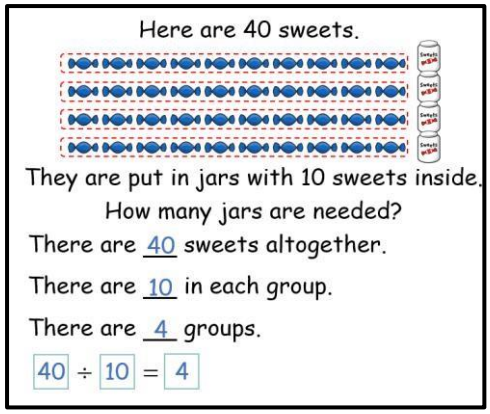
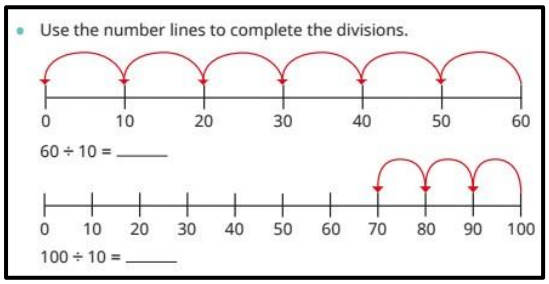
Multiply a 4-digit number by a 1-digit number. Use the formal written method to multiply the 4-digit and 1-digit numbers together.	 
Multiply 2-digit, 3-digit and 4digit numbers by a 2-digit number. Multiply the ones by the top number and then the tens by the top number. A place holder must always be in the one's column of the second row. Using different colours per row can help when introducing the method.	  

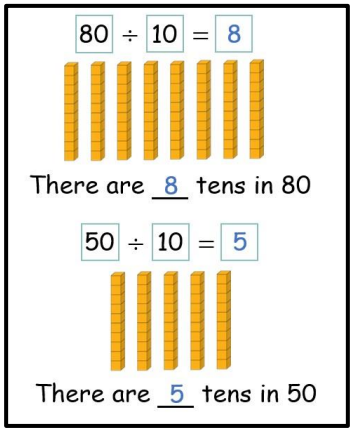
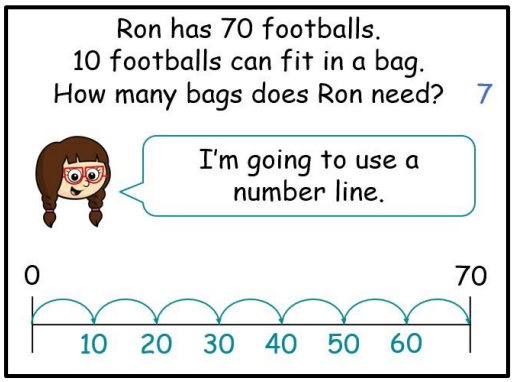
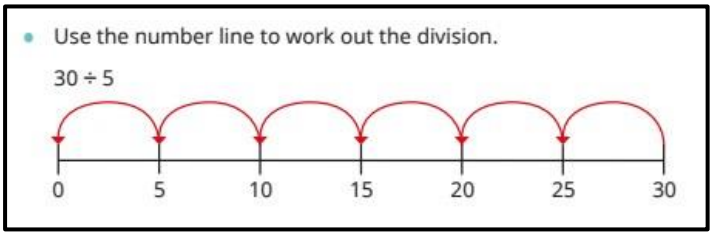
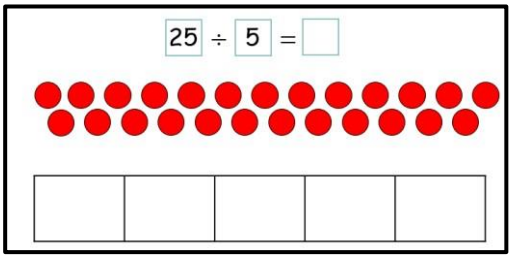
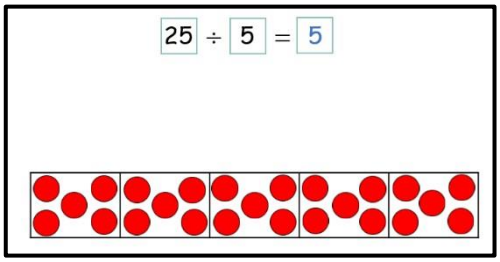
Division- Year 1

Method	Example
Making equal groups – grouping Children will be given a total amount and be asked to make groups of an equal amount.	 
Making equal groups – sharing Children will be given a total amount and be asked to physically share them into equal groups.	 

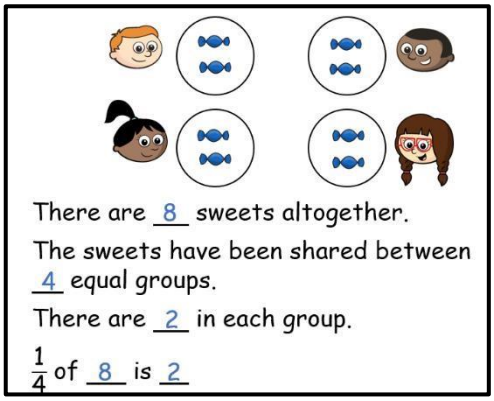
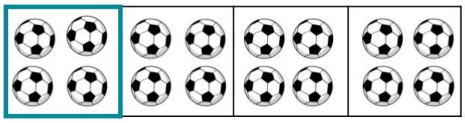
Division –

Year 2

Method	Example
Divide by 2 Children to use their knowledge of the 2 times tables todivide by 2.	 
Halving Children to understand that when we halve, we are dividing by 2.	 
Dividing by 10 Children to use their knowledge of the 10 times tables and counting in 10 to divide by 10.	 

	 
Divide by 5 Children to use their knowledge of the 5 times tables and counting in 5 to divide by 5.	  

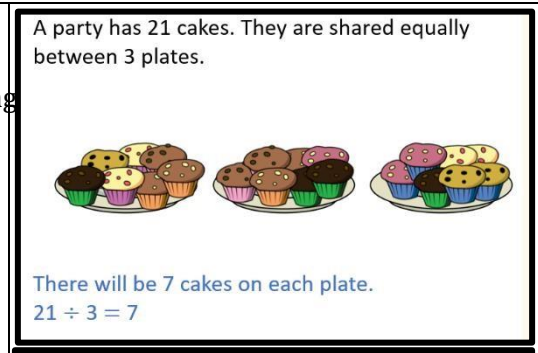
Division –

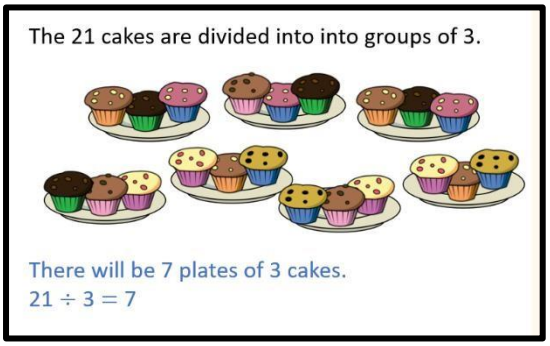
Finding a quarter Children will be encouraged to share totals into four equal groups in order to see the link between finding a quarter and dividing by 4.	 There are 8 sweets altogether. The sweets have been shared between 4 equal groups. There are 2 in each group. $\frac{1}{4}$ of 8 is 2 There are 16 footballs in a bag. Jo takes $\frac{1}{4}$ of the footballs out. How many footballs does she take out? 4 

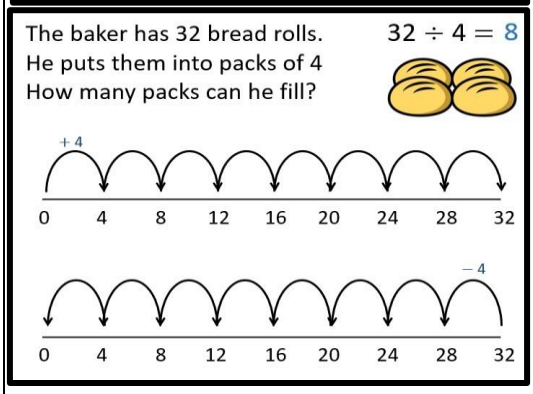
Year 3

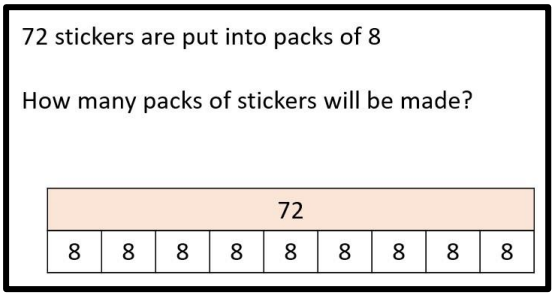
Divide by 3, 4 and 8

Children will explore dividing by 3, 4 and 8 by sharing into equal groups and by grouping.



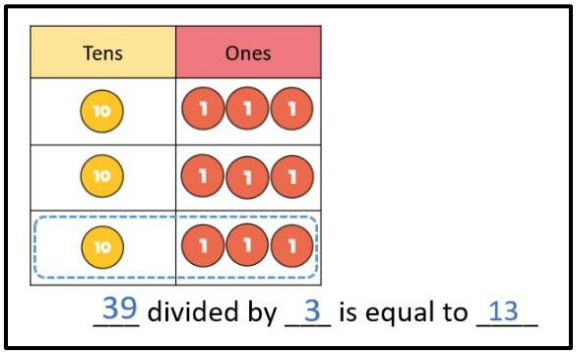


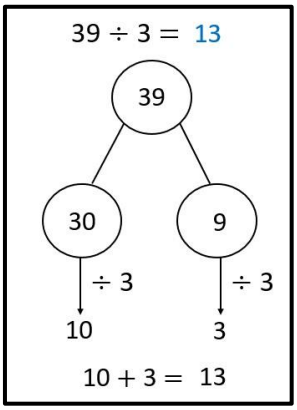




Divide a 2digit number by a 1-digit number – no exchange

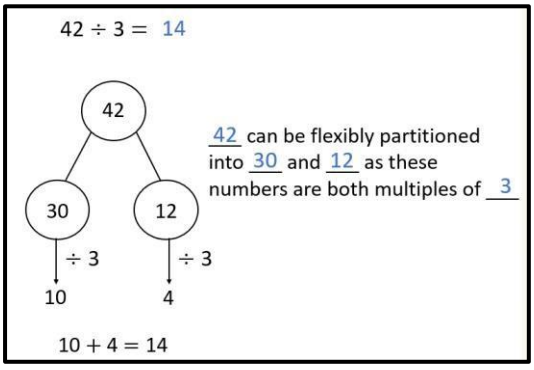
Children will focus on partitioning a number into tens and ones and sharing into equal groups.

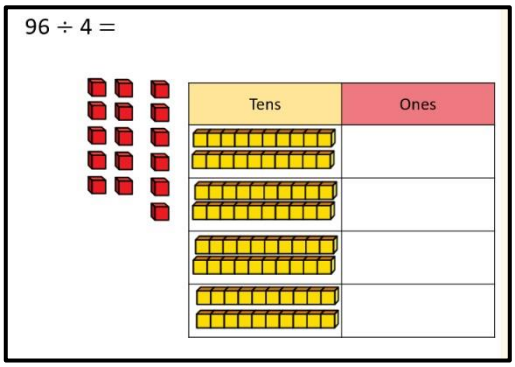




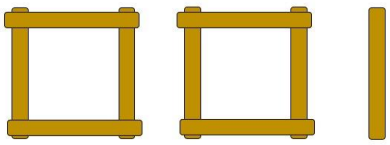
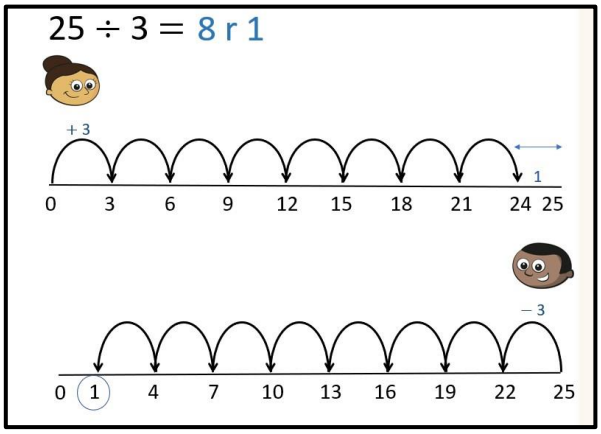
Divide a 2-digit number by a 1-digit number – flexible partitioning

Children will partition the 2digit number into two numbers that are a multiple of the divisor.
In the example to the right, 96 has been partitioned into 80 and 16 because they are both multiples of 4 and can now be divided by 4.

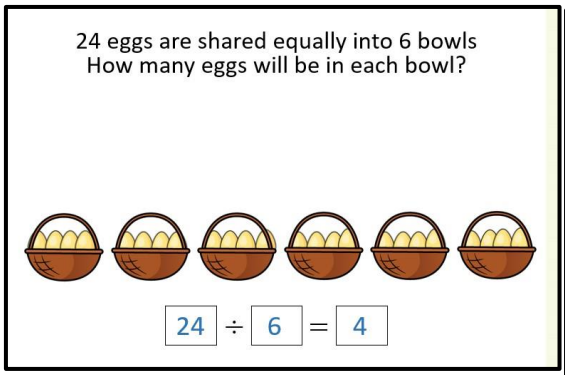
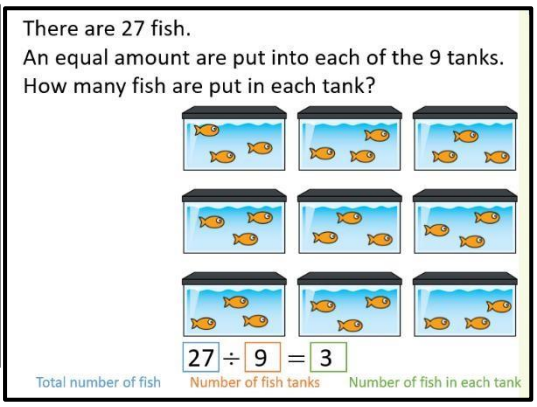
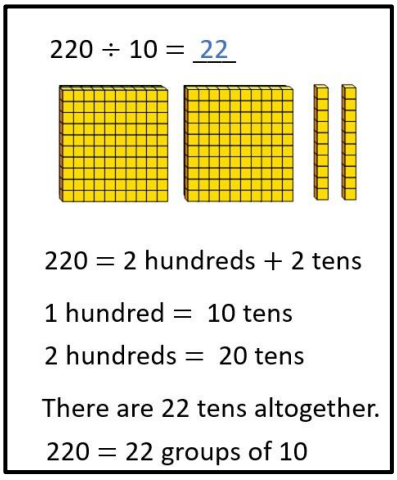
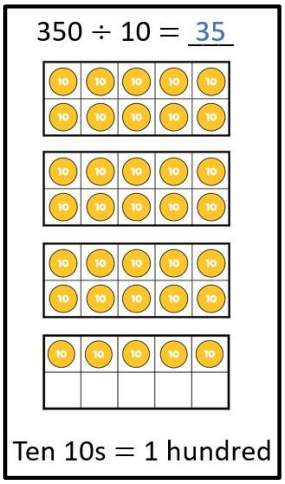
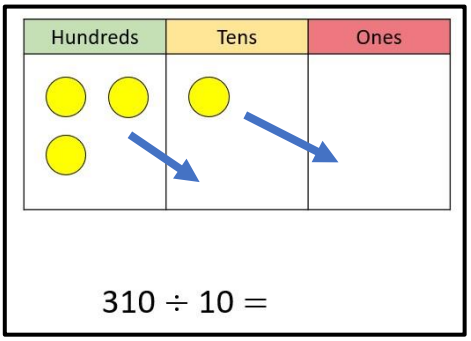
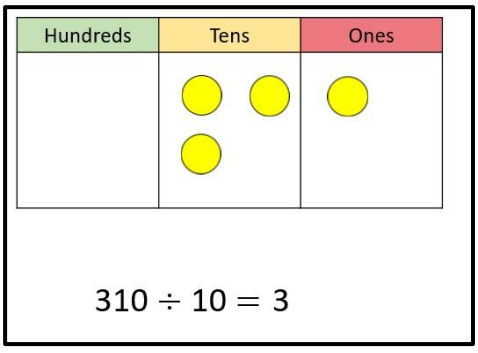




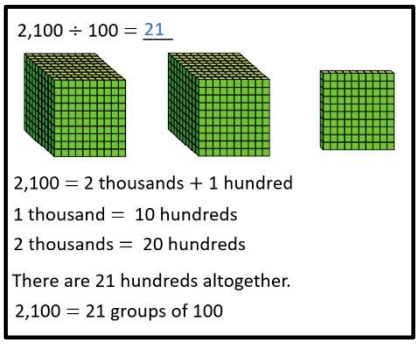
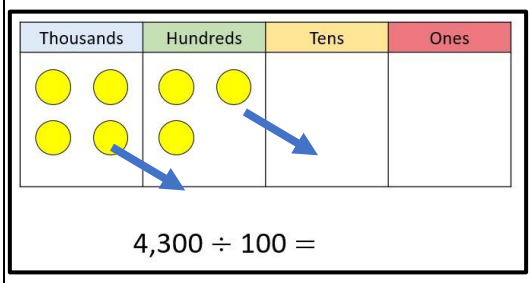
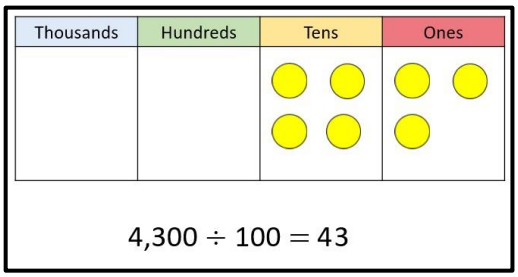
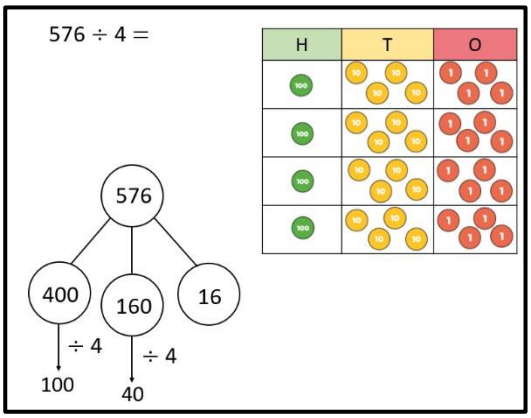
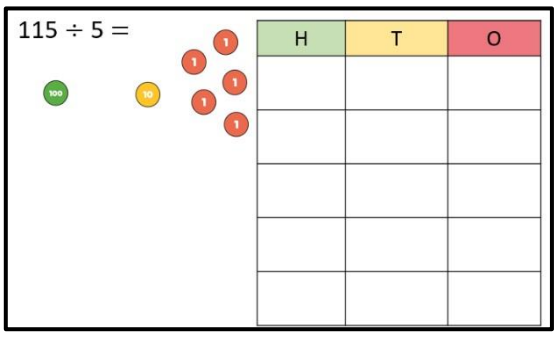
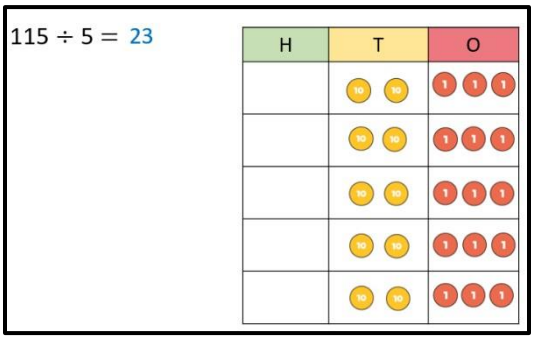
Division –

Divide a 2-digit number by a 1-digit number with remainders	Mo has 9 lolly sticks. What if Mo used his sticks to make squares?  Each square uses 4 sticks. Mo can make 2 squares with 9 sticks. There is one stick remaining. 9 ÷ 4 = 2 remainder 1	

Year 4

Divide by 6,7 and 9 Children will use their knowledge of the 6-, 7- and 9-timestables to divide.	 
Divide by 10 Children will know that when we divide by 10, the number gets ten times smaller. The digits in the number will shift one place value column to the right.	   

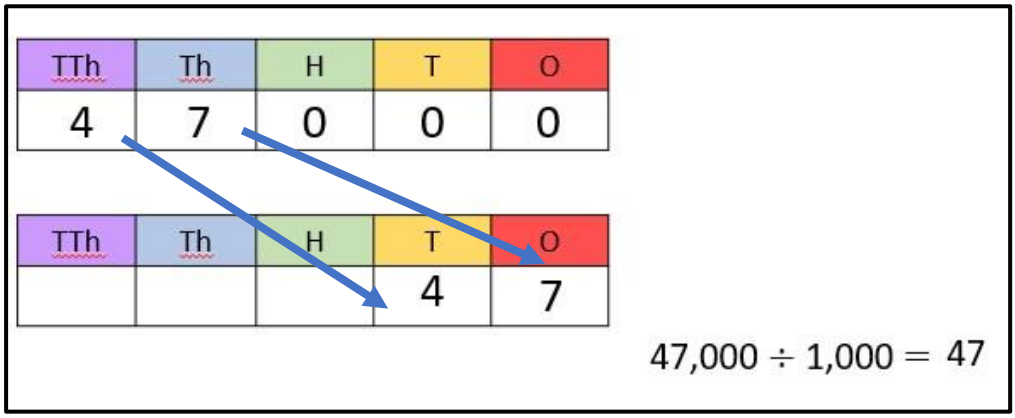
Division –

Divide by 100 Children will know that when we divide by 100, the number gets one hundred times smaller. The digits in the number will shift two place value columns to the right.	  
Divide a 3-digit number by a 1-digit number Building on from year 3, they will partition the 3-digit number to make multiples of the divisor. In the bottom example, 115 has been partitioned. The 1 hundred has been exchanged for 10 tens so that it can now be divided by 5. Then, the one 10 has been exchanged for ten ones. Now, the 15 ones have been divided by 5.	  

Division - Year 5

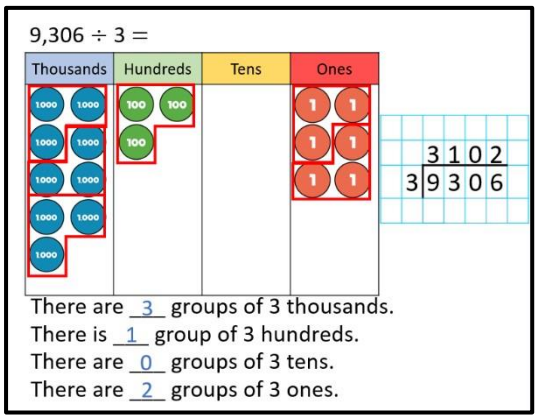
Divide by 1,000

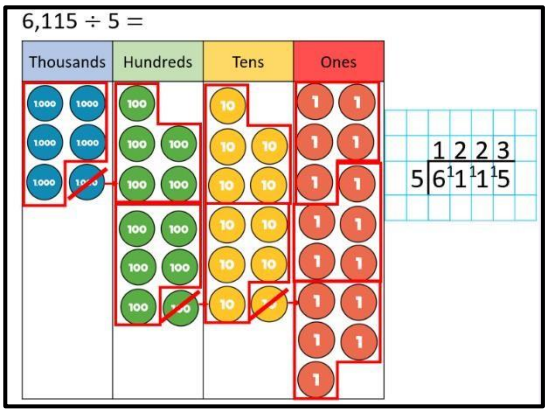
Children will know that when we divide by 1,00, the number gets one thousand times smaller. The digits in the number will shift three place value columns to the right.

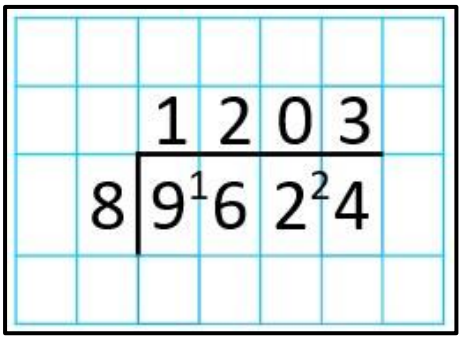


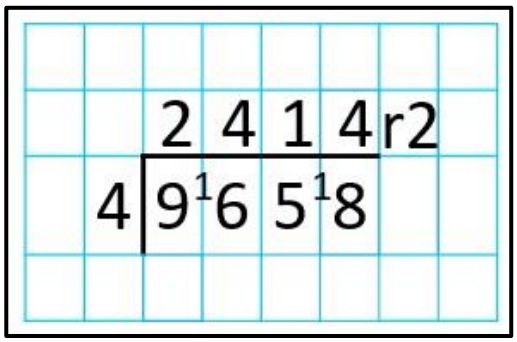
Divide a 4-digit number by a 1-digit number with and without remainders.

Children will be introduced to the bus stop short division method for the first time.









Division - Year 6

Long division by chunking

Using multiples of the divisor, begin taking away large chunks until you get to 0 or a remainder.

Key multiples are: 1, 2, 5 and 10.

Calculate:
741 ÷ 13 = 57

		5	7
13	6 7	1 4	1
–	6	5	0
		9	1
–		9	1
			0

(×50)

(×7)

13 × 1 = 13
13 × 2 = 26
13 × 3 = 39
13 × 4 = 52
13 × 5 = 65
13 × 6 = 78
13 × 7 = 91

13 × 10 = 130
13 × 20 = 260
13 × 30 = 390
13 × 40 = 520
13 × 50 = 650
13 × 60 = 780
13 × 70 = 910

		0	4	8	9	
	15	7	3	3	5	
		6	0	0	0	(15 × 400)
		1	3	3	5	
		1	2	0	0	(15 × 80)
			1	3	5	
			1	3	5	(15 × 9)
					0	

Long Division

Calculate 4,320 ÷ 32 = 135

32	64	96	128	160	192

		1	3	5
32	4	3	2	0
–	3	2		
	1	1	2	
–		9	6	
		1	6	0
–		1	6	0
				0

			0	3	6	
	12	4	3	2		
		3	6			
			7	2		
			7	2		
				0		