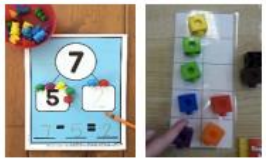
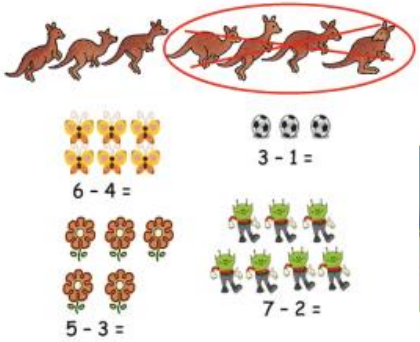
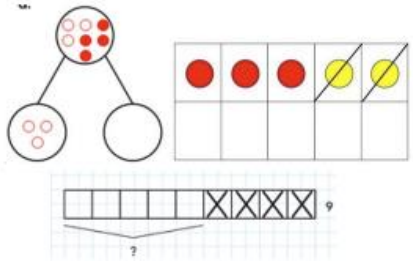
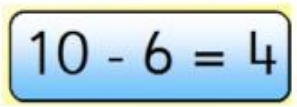
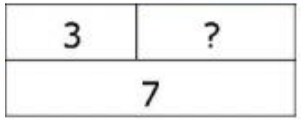
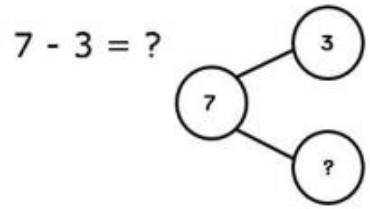
South Gosforth First School

'Roots to grow and wings to fly'

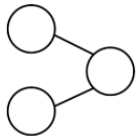
Calculation Progression

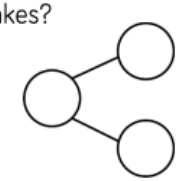
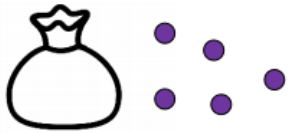
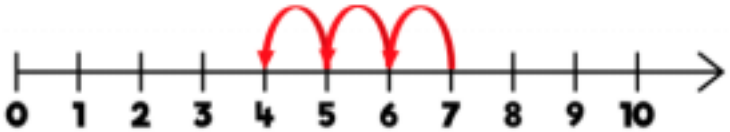
Subtraction

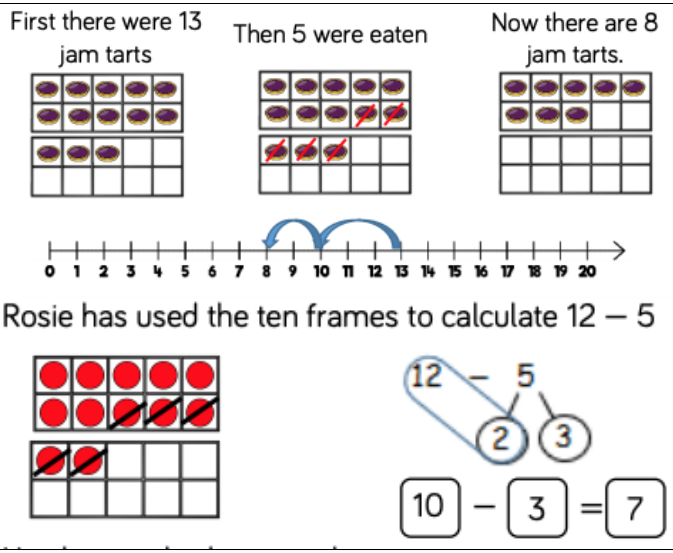
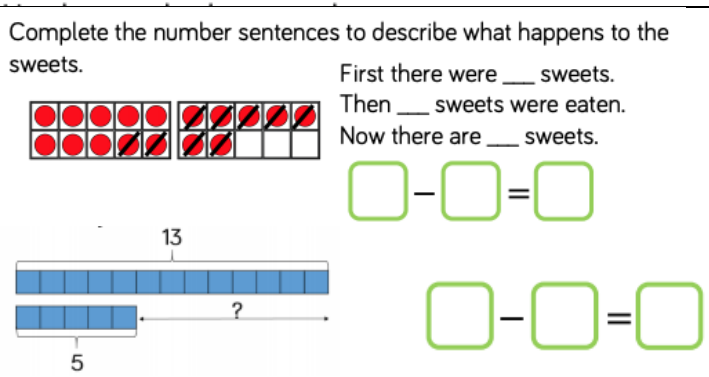
EYFS

Early Learning Goals	Models and Representations - CPA
Number ELG - Have a deep understanding of number to 10, including the composition of each number - Subitise (recognise without counting) up to 5 - Automatically recall number bonds up to 5 (including subtraction facts) and some bonds to 10, including double facts.	 Use toys and general classroom resources for children to physically manipulate, group/regroup.   Use specific maths resources such as snap cubes, Numicon, bead strings etc.  Use visual supports such as ten frames, part part whole and subtraction mats, with the physical objects and resources that can be manipulated.  A group of pictures for children to cross out or cover quantities to support subtraction.  Use visual supports such as ten frames, part part whole and bar model with pictures/icons. A focus on symbols and numbers to form a calculation.    

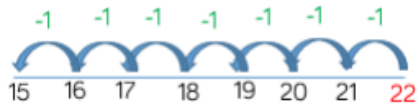
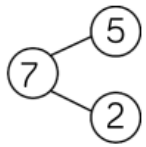
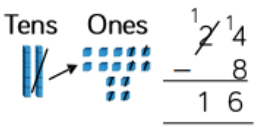
Year 1

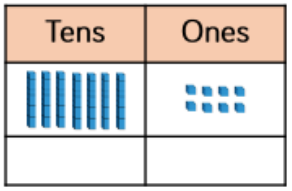
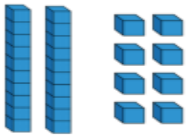
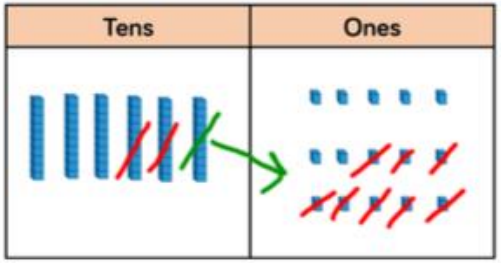
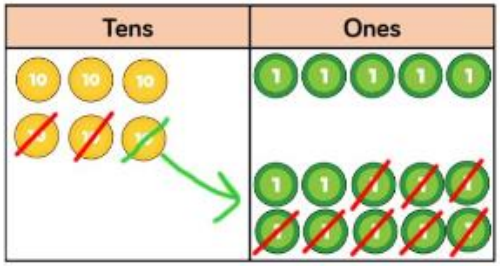
Objective and Strategy	Models and Representations - CPA
Subtraction within 10 **Taking away, how many left?** Children are first introduced to the language of subtraction, rather than the subtraction symbol straight away. Taking away is used in a range of real life contexts such as flying away and eating. The use of zero is important so that children know when nothing is taken away the whole remains the same.	Complete the sentences to create a story and draw a part-whole model.  At first there were ___ apples. Then ___ were eaten. Now there are ___ apples. Write a story to go with the pictures and draw a part-whole model. First:  Now: 
Subtraction within 10 **Taking away, how many left? Introducing the subtraction symbol** Children continue to use concrete and pictorial representations, alongside the use of the subtraction symbol, to deepen their understanding.	 7 – 2 = ___ At first there were 10 bananas. 7 of them were eaten. How many bananas are left? Use counters/cubes to help you solve and complete: □ – □ = □ 

Subtraction within 10 **Finding a part** Children continue to use the subtraction symbol. Building on their understanding of finding a part, they are introduced to subtraction by partitioning.	How many ice creams do not have flakes?  6 – 2 = ___  There are ___ ice creams that do not have flakes. In total there are 8 counters. How many counters are there in the bag? Show this in a part-whole model and as a calculation. 
Subtraction within 10 **Counting back** Children count backwards to subtract, which is an important step to help children work in the abstract.	 7 – 3 = ___ 7 – 3 = ___ 5 – 0 = ___
Subtraction within 10 **Finding the difference** Children explore finding the difference as a form of subtraction. They could use their skills of counting back and counting on to help them to find the difference. Alternatively, they can make both amounts and visually see how many more/less a number is.	Whitney  Teddy  Whitney has ___ more cakes than Teddy. 7 – 3 = ___ What's the difference between 10 and 6?  The difference between 10 and 6 is ___  10 – 6 = ___

Subtracting – Crossing 10 (1) Children will be introduced to subtraction where they have to cross ten. This strategy focuses on partitioning to make ten. Children represent this using concrete manipulatives or pictorially with ten frames and number lines and will move towards using this as a mental strategy.	
Subtraction – Crossing 10 (2) Children subtract numbers, within 20, crossing 10 using the different structures of subtracting (taking away, partitioning, difference). They continue to use concrete manipulatives and pictorial methods to support their understanding.	
Further Notes	• Children will continue to count regularly on and back from different numbers in 1s and in multiles of 2, 5 and 10. • Children will be encouraged to learn number bonds to 20 and experience the = sign in different positions. • Children should see addtion and subtraction as related operations eg 6 + 4 = 10 which is related to 10 – 4 = 6. • Children will continue to practise fluency in subtraction facts within 10 which will support subtraction with 2-digit numbers in Year 2.

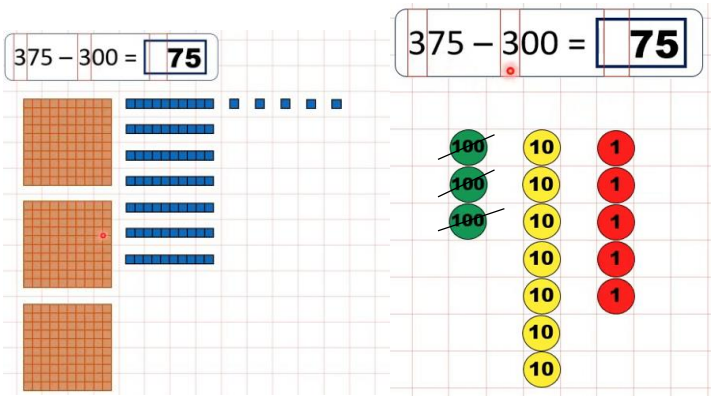
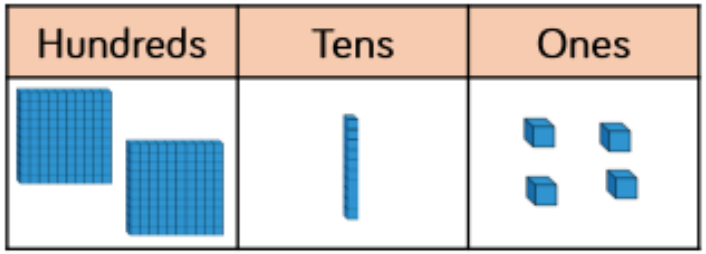
Year 2

Objective and Strategy	Models and Representations - CPA
Subtract 10s Children make use of place value to add and subtract 10s from a given number within 100. The focus is the importance of the tens digit within the given number and children should be encouraged to see the relationship. Children may also make connections between one-digit facts and 2-digit calculations.	 5 6 − 3 0 _____
Subtract 1-digit from 2-digits- crossing ten Children need to be able to count to 20 and need to be able to partition two-digit numbers in order to subtract from them. They need to understand the difference between one-digit and two-digit numbers and line them up in columns. In order to progress to using the number line more efficiently, children need to be secure in their number bonds.	22 − 7 =  Can you put the larger number in your head and count back the smaller number? Start at 22 and count back 7 Can we use number bonds to subtract more efficiently?  We can partition 7 into 5 and 2 and use this to bridge the 10  Subtract 8 from 24 

Subtract a 2-digit number from a 2-digit number not crossing ten This is an important step before children start to look at subtraction where they cross a tens boundary. Children can first learn to subtract multiples of ten and then ones from a two-digit number, using a partitioning method. They may then move on to a formal written method, using Base 10 equipment to support the calculation.	78 minus 34 = _____ 8 ones – 4 ones = _____ 7 tens – 3 tens = _____ We have _____ tens and _____ones.  34 – 13 = ____ 34 30 4 –10 –3 20 1 Subtract 13 from 28  2 8 – 1 3 1 5
Subtract a 2-digit number from a 2-digit number – crossing ten – subtract ones and tens Children use their knowledge that one ten is the same as ten ones to exchange when crossing a ten in subtraction. As with the previous step flexible partitioning isused as a method when the children are calculating with exchanges. Children use concerte manipulatives (such as Base 10) and pictorial representations (such as number lines and part whole models) to develop their understanding and may move to recording this using the written columnar method.	 5 1 6 5 – 2 8 3 7  63 – 17 = 46 10 7 63 – 10 = 53 53 – 7 = 46 63 – 17 = 46 10 7 63 – 7 = 56 56 – 10 = 46
Further Notes	• Children will be counting regularly, on and back, in steps of 2,3 5 and 10. Counting back in tens from any number will link with subtracting multiples of 10. • Children will practise subtraction to 20 to develop fluency and will be encouraged to use the facts they know to derive others eg using 10 – 8 = 2 and 8 = 10 -2 to calculate 100 – 80 = 20 and 80 = 100 – 20. • Children will learn to check their calculations using a range of strategies, including by using the inverse method of addition to check a subtraction.

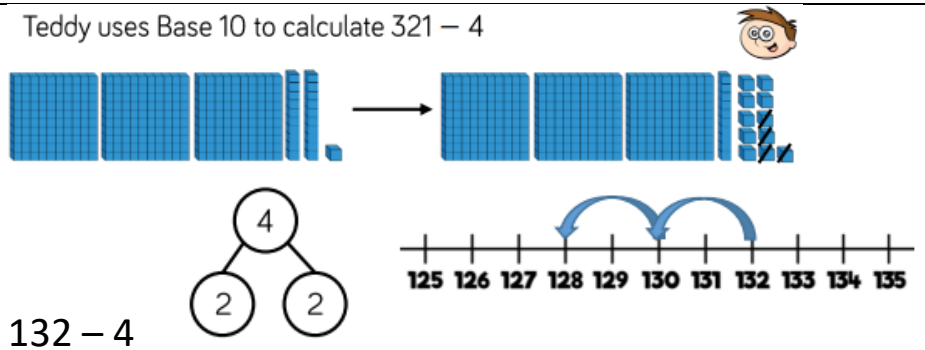
	• Children will be encouraged to recognise the subtraction structure of difference by solving contextual problems involving finding a difference eg I have £19 and I want to buy a game which costs £25. How much more money do I need? (£25 - £19 = £6)

Year 3

Objective and Strategy	Models and Representations - CPA
Subtract Multiples of 100 Children will apply their prior knowledge of subtracting ones and tens to subtracting multiples of 100. Using concrete manipulatives and pictorial representations throughout is important so the children can see the value of the digits. A range of familiar representations of a given calculation are used alongside the column-subtraction layout so that children see the relationship between the numbers.	
Subtract 3-digit and 1-digit numbers – not crossing 10 During this small step, children subtract ones from a 3-digit number without an exchange.	 214 – 3 = ___ 356 – 5 = 357 – 5 = 358 – 5 = 359 – 5 =

Subtract 1-digit from 3-digits- crossing 10

Children subtract 1-digit from a 3-digit number using an exchange. Children need to be secure in the fact that 321 is 3 hundreds, 2 tens and 1 one but that it is also 3 hundreds, 1 ten and 11 ones.

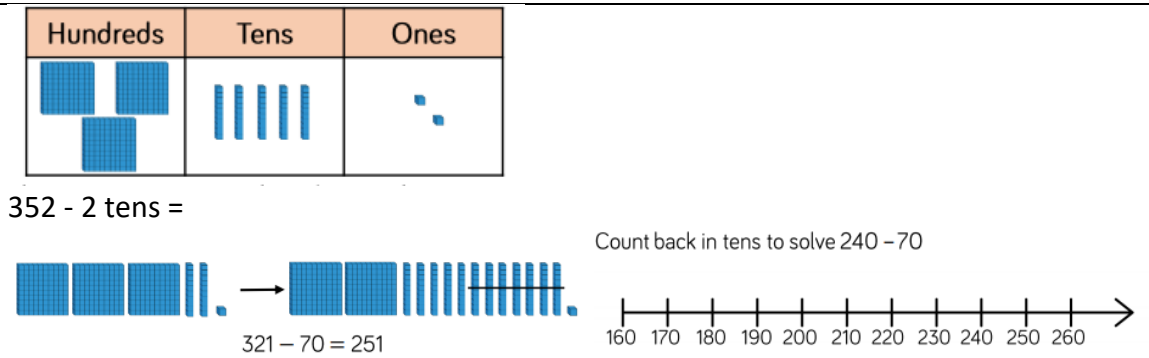


132 – 4

123 – 8 =?

Subtract 2-digits from 3-digits

Children subtract multiples of 10 from a 3-digit number, first without and then with an exchange. The examples show different ways this concept could be taught using number lines and part-whole models.
The column method could be used, however it is not the most efficient method. Counting backwards in tens or using 100 to help will support mental strategies.



352 - 2 tens =

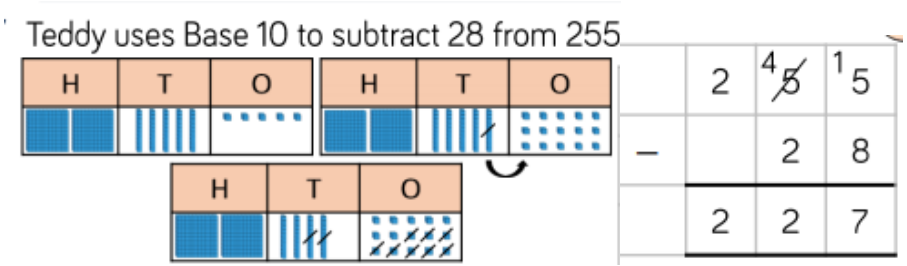
Amir calculates 425 – 90 by subtracting 100 and then adding 10

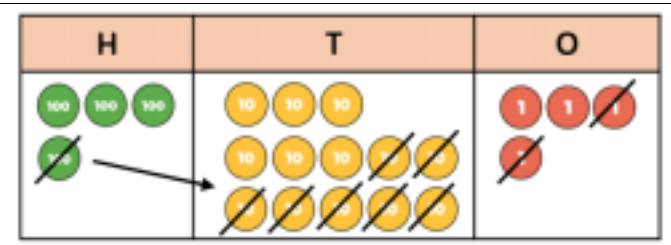
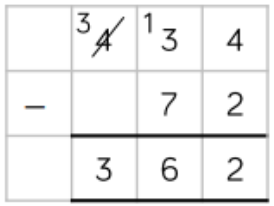
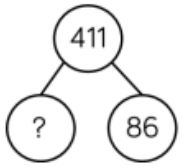
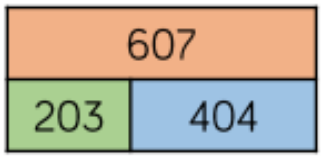
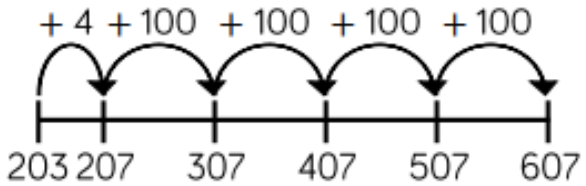
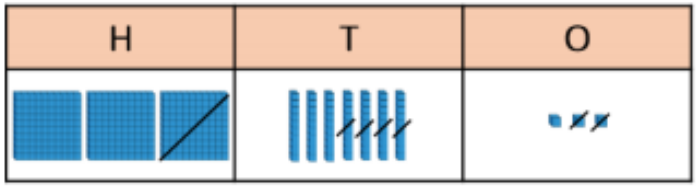
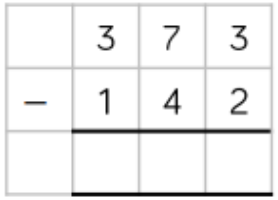
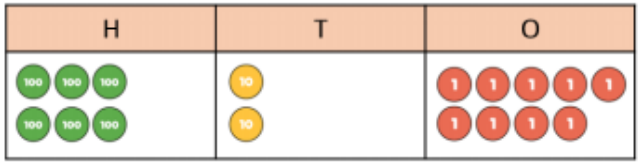
425 – 100 = 325

325 + 10 = 335

Subtract 2-digits from 3-digits (2)

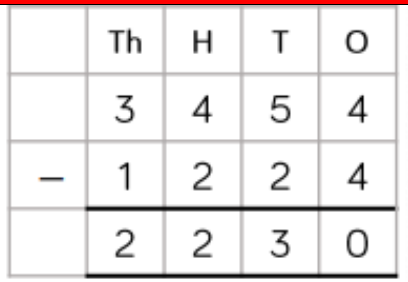
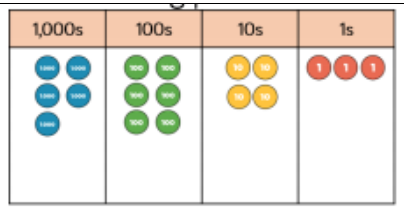
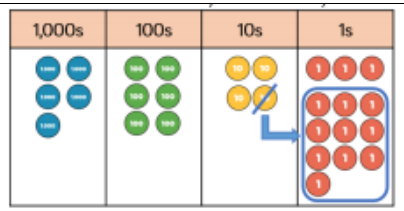
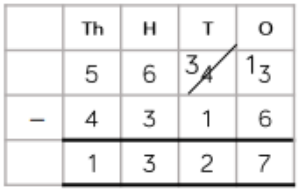
Children focus on the position of numbers and place value to subtract 2-digits from 3-digits using the column method. Children start by exchanging one ten for ten ones. Next they exchange one hundred for ten tens before subtracting numbers where there are exchanges in both columns. Children are encouraged to use Base 10 and place value counters so they can physically exchange



and see the link between the concrete and the written column method.	   
Subtract 3-digits from 3-digits (1) It is important for the children to understand that there are different methods of subtraction. They need to explore efficient strategies for subtraction, such as counting on (number lines), near subtraction and number bonds. They then move on to setting out formal column subtraction supported by practical equipment.	   
Subtract 3-digits from 3-digits (2) Children explore column subtraction using concrete manipulatives. It is important to show the column method alongside so that children make the connection to the abstract method and so understand what is happening. Children progress from an exchange in one column, to an exchange in two columns. The importance of recording any exchanges clearly in the written method is reinforced.	629 – 483  

Further Notes	• Children should count regularly, on and back, including multiples of 4, 8, 50 and 100 and steps of 1/10. • Chidlren will regularly practise fluency in subtraction facts within and across 10 to support their understanding in column subtraction. • Children should continue to partition in different ways to help to support subtraction. • Children will be encouraged to choose the mental strategies which are the most efficient for the numbers involved. • Children will continue to practise recall of appropriate doubles and halving facts to support calculations such as 18-9=9.

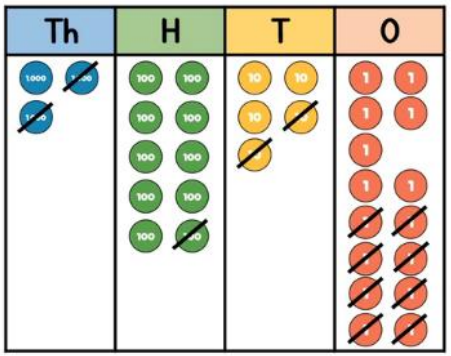
Year 4

Objective and Strategy	Models and Representations - CPA
Subtract two 4-digit numbers – no exchange (1) Building on their experiences in Year 3, children use their knowledge of subtracting using the formal column method to subtract two 4-digit numbers. Children will focus on calculations with no exchanges, focusing on the value of each digit.	 
Subtract two 4-digit numbers – one exchange (2) Children continue to use their knowledge of subtracting using the formal column method to subtract two 4-digit numbers. Children explore subtractions where there is one exchange. They use place value counters to model the exchange and match this with the written column method.	   

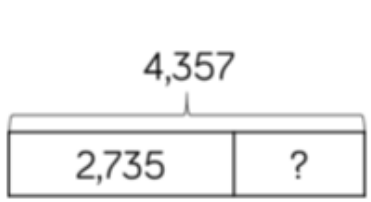
Subtract two 4-digit numbers – more than one exchange (3)

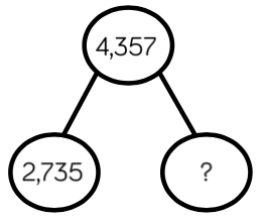
Children explore what happens when a subtraction has more than one exchange. They can continue to use manipulatives to support their understanding. Some children may feel confident calculating with a written method.

Children will be encouraged to continue to explain their working to ensure they have a secure understanding of exchange within 4-digit numbers.



Th	H	T	O
3 ~~4~~	1 0	5 ~~6~~	1 5
2	1	2	8
1	9	3	7





Efficient Subtraction

Children use their understanding of column subtraction and mental methods to find the most efficient methods of subtraction. They compare the different methods of subtraction and discuss whether they would partition, take away or find the difference.

Ron, Rosie and Dexter are calculating 7,000 – 3,582

Here are their methods:

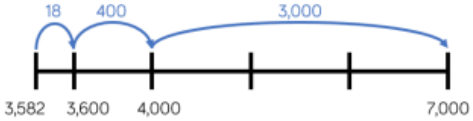
Ron

	Th	H	T	O
	~~6~~ 7	~~9~~ 8	~~9~~ 8	10
–	3	5	8	2
	3	4	1	8

Rosie

	Th	H	T	O
	6	9	9	9
–	3	5	8	1
	3	4	1	8

Dexter



3,000 + 400 + 18 = 3,418

Whose method is most efficient?
Use the different methods to calculate 4,000 – 2,831

Further Notes	• Children should continue to count regularly, on and back, now including multiples of 6, 7, 9, 25 and 1000 and steps of 1/100. • Children should continue to partition numbers in different ways. • They will be encouraged to choose from a range of strategies, exploring which is the most efficient method for a given subtraction such as counting forwards or backwards, partitioning, using column subtraction, using known facts such as 'near' doubles or place value.