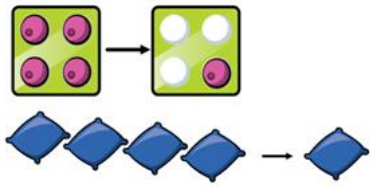
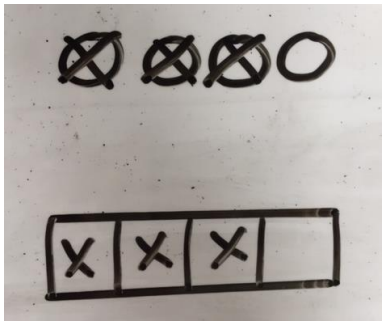
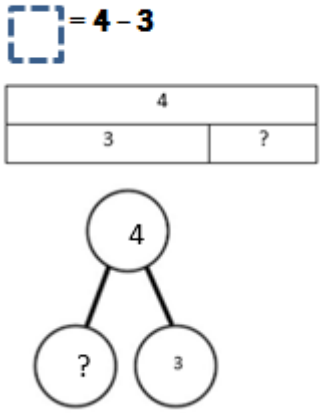
FS

Progression for Subtraction

DEVELOPING UNDERSTANDING AND MENTAL METHODS

- Use developing mathematical ideas and methods to solve practical problems involving **counting** and **comparing** in a real or role play context using models and images to support learning.
- Use rhymes, stories and songs to introduce mathematical concepts.
- Children develop ways of recording calculations using Numicon, pictures, fingers, ten frames and other items such as beanbags could be used.

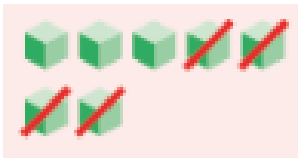
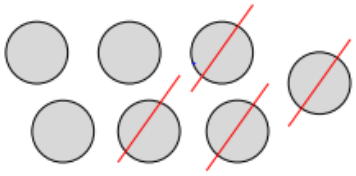
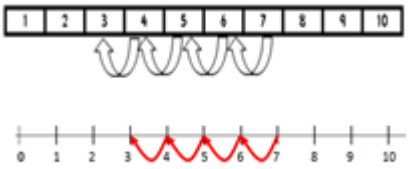
Concrete	Pictorial	Abstract
Physically and removing objects from a whole. 4 - 3 = 1 	Children to draw the concrete resources they are using and cross out the amount. 	4 - 3 = 

- Beginning to use vocabulary involved in subtraction (take away, leave, how many are left? How many have gone? One fewer / less, two fewer / less, how many less is ...than...? difference between).
- Can answer questions such as:

  What is this number? Which is less: 4 or 7?

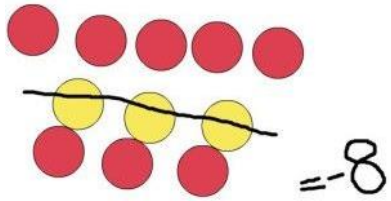
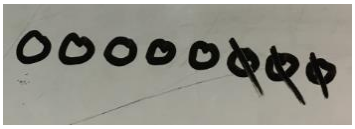
  What number: comes before 10, is one fewer / less than 5, 12 etc.

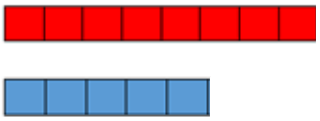
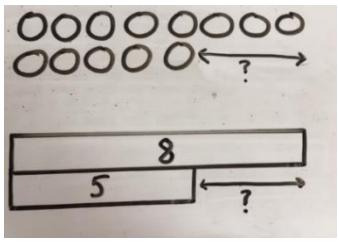
- Say how many are left when some are taken away by counting how many are left or by counting back from the number.
- Find out how many have been removed or how many more will make a given number by counting up to the larger number.
- Use related vocabulary and symbols to describe and record subtraction number sentences.
- Recognise that subtraction cannot be done in any order and that the bigger number always comes first.
- Encourage the children to communicate their thinking and reasoning orally and when appropriate in writing.

Concrete	Pictorial	Abstract
Counting back: Children should be encouraged to physically remove the objects using touch counting.  ***For illustration purposes, the amount being 'taken away' are shown crossed out.***	Children to represent what they see pictorially e.g. 	Children to represent the calculation on a number line or number track and show their jumps. Encourage the children to use empty number lines. 

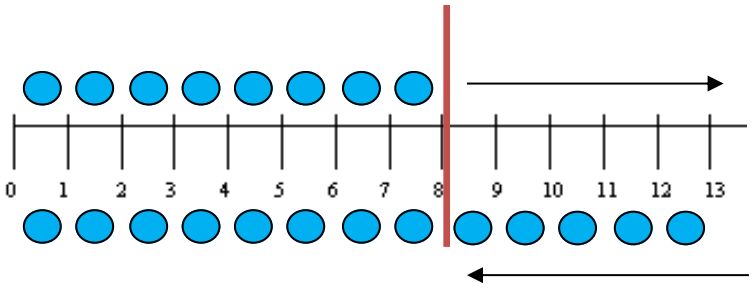
Please note: when using a number line or number track for subtraction, stepping and jumping go underneath the line.

FS / Y1

Concrete	Pictorial	Abstract
Use double sided counters to reinforce the concept of subtraction. 	Encourage the children to illustrate concrete equipment. 	8 – 3 = ☐ 8 - ☐ = 3

Concrete	Pictorial	Abstract
Finding the difference: What is the difference between 8 and 5? 	Children to draw the cubes / other concrete objects which used or use the bar model to illustrate what they need to calculate. 	Find the difference between 8 and 5. 8 – 5, the difference is ☐ Children explore why: 9 – 6 = 8 – 5 = 7 – 4 = All have the same difference.

- Children begin to use the number line to count on and back in ones to **find the difference**



Here we are taking off what we have got and counting on to find out how many more we need.

Here we have 13 bags and we count back to how many we have got to find out how many more we need.

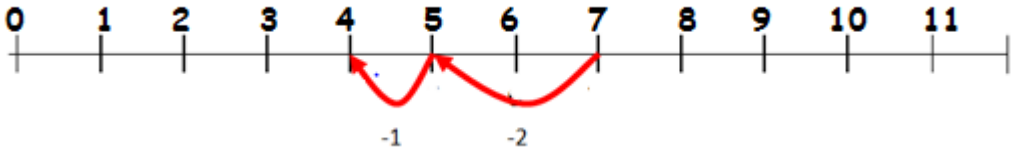
Partitioning & Bridging

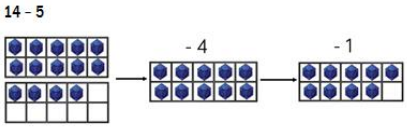
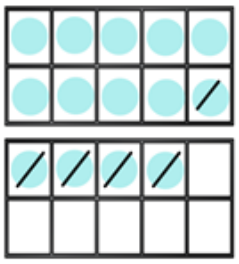
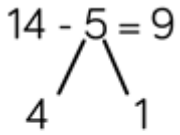
- The methods here are based on partitioning and a developing knowledge of recall and subtraction facts as they lead into their later stages of progression in the written method.

Bridging

- With developing number facts for '5 and a bit' subtract a pair of numbers mentally by jumping on a number line.

Bridging through 5

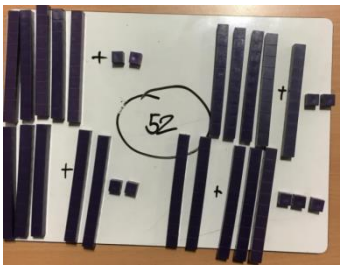
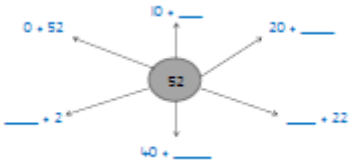


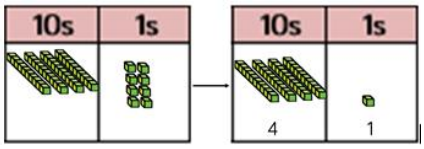
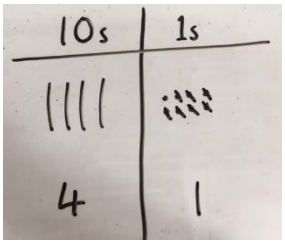
Concrete	Pictorial	Abstract
Bridging through 10 using ten frames. 	Children to present the ten frames pictorially and discuss what they did to make 10. 	Children to show how they can make 10 by **partitioning the subtrahend.**  **14 – 4 = 10** **10 – 1 = 9**

Y1 / Y2

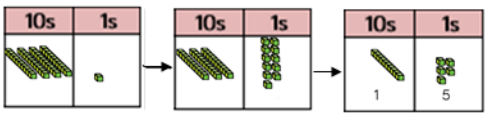
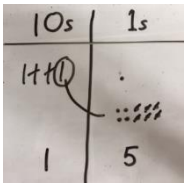
Partitioning in Different Ways

- Encourage the children to practise the skill of partitioning numbers in different ways.

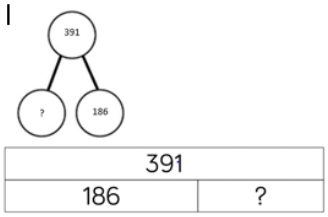
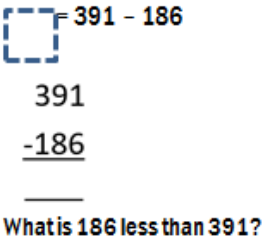
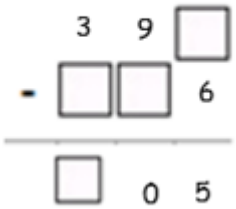
Concrete	Pictorial	Abstract
Use concrete equipment to explore **partitioning numbers into different combinations**. 	Encourage the children to draw pictorial representations of concrete equipment. 	50 + 2 = 52 40 + 12 = 52 30 + 22 = 52 20 + 32 = 52 10 + 42 = 52 

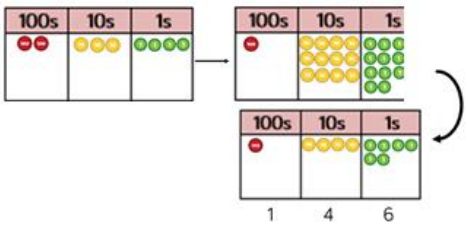
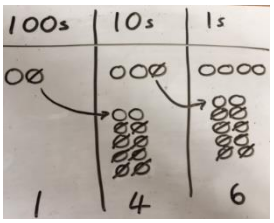
Concrete	Pictorial	Abstract
Column method using practical equipment e.g. base ten equipment, straws, Numicon etc 48 – 7 = 41 	Children to illustrate concrete equipment with pictorial representations. 	Expanded column method 48 = 40 + 8 7 = 00 + 7 40 + 1 = 41

Y2 / Y3

Concrete	Pictorial	Abstract
Column method using practical equipment e.g. base ten equipment, straws, Numicon etc 41 – 26 = 	Children to illustrate concrete equipment with pictorial representations. Remembering to show the exchange. 	Expanded column method 30 41 = 40 + 1 26 = 20 + 6 10 + 5 = 15

- **Conceptual Variation:** Different ways to ask the children to solve a mathematical calculation e.g. 391 – 186 =

I  	**Raj spent £391, Timmy spent £186.** **How much more did Raj spend?** **Calculate the difference between 391 and 186.**	 	**Missing digit calculations** 

Concrete	Pictorial	Abstract
Column method using place value counters. 234 – 88 =  	Children to illustrate concrete equipment with pictorial representations. Remembering to show the exchange.  	Expanded column method 1000 120 1 234 = 200 + 30 + 4 88 = 000 + 80 + 8 100 + 40 + 5 = 145

Expanded Written Method Steps

- This leads children to the more compact written method developing an understanding of its structure and efficiency. Two and three digit subtraction: Start with subtracting the units, then the tens etc.

No adjustments

164 – 52 = 112

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 164 = 100 +  60 + 4
-  52 = 000 +  50 + 2
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 112   100    10   2
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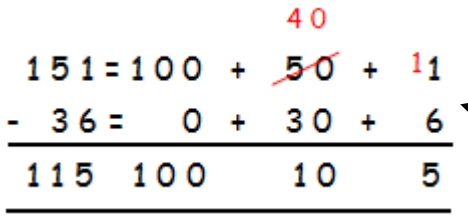
The amount of time that should be spent teaching and practising the expanded method will depend on how secure the children are in their recall of number facts and with partitioning.

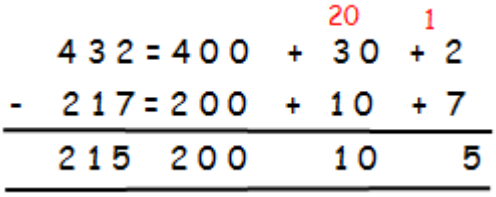
One adjustment tens to units

151 – 36 = 115 Discuss how 51 can be partitioned into 40 and 11)



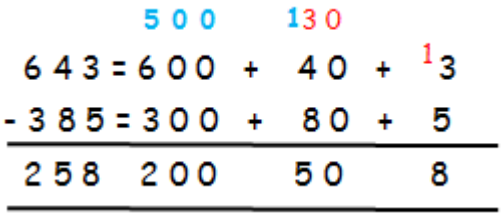
It is important when using any method that the correct language is used. For example, eleven take away six, forty take away thirty, one hundred take away zero.

432 – 217 = 215



Two adjustments

643 – 385 =

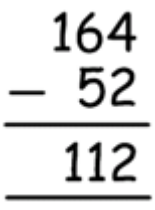


Y3 / Y4 / Y5 / Y6

Standard Written Method / Compact Method

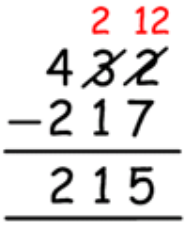
No adjustment

164 – 52 = 112



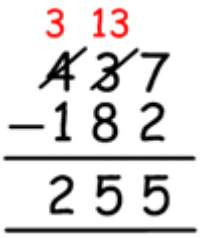
One adjustment, tens to ones

432 – 217 =



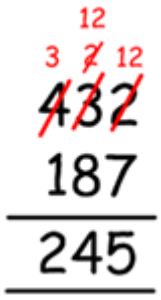
One adjustment, hundreds to tens

437 – 182 = 255



Two adjustments, hundreds to tens & tens to ones

432 – 187 = 245



Extend to decimals

14.24 – 8.70 = 5.54