LANE END CALCULATION POLICY

SUBTRACTION

We follow a Concrete Pictorial Abstract approach to mathematical learning and children work through each stage before moving on to more formal written methods. Models, images and resources are selected carefully to best teach concepts and structures. We recognise that all children work through this approach.

Year 1

Skill: Subtract 1-digit numbers within 10

It is important at this early stage not to set the children up with misconceptions that teachers need to 'unteach' further up school e.g. We can't take the bigger number from the smaller number. We don't teach this at the early stage of subtraction but can say for example, "When we are working in Year 1 we will always subtract the smaller number from the larger number NOT we can't subtract the larger number from the smaller number"

Make sure that you do lots of counting backwards in ones using a number line – children should be as fluent backwards and they are forwards.

Children are introduced to subtraction by taking a smaller number of objects away from a larger group of objects. This is called reduction. We do this initially in the context of a story – "First…..next……then"

We can link the story to a numerical representation – each number represents something in the story.

e.g. The child starts with 3 dinosaurs, removes one and knows that there are two left.



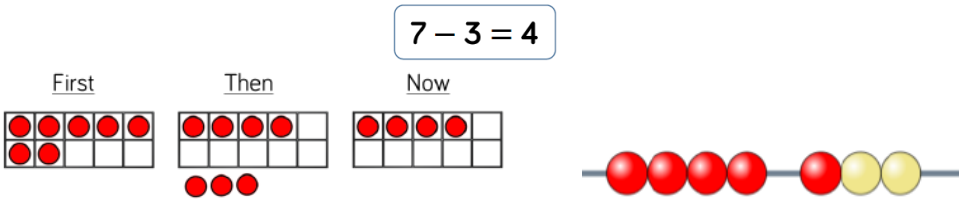


Children start with 5 counters in ten frame, remove 2 to know there are 3 left.



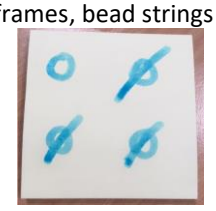


Teaching Point - The children will already have started to learn to add and can therefore begin to understand that given any 2 parts of the story, we can work out the third part (given any two numbers in an equation we can work out the third one) – addition and subtraction are inverse operations.



Children will then continue to physically take away items or objects (reduction) from a whole and then represent this pictorially e.g. numicon, tens frames, bead strings

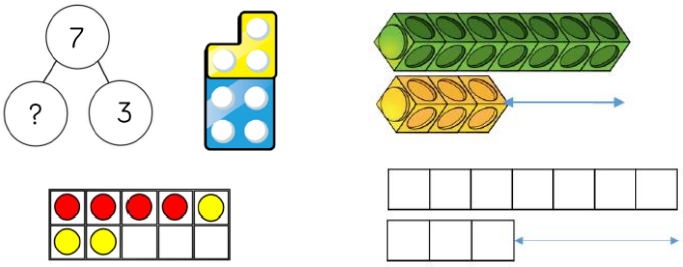




Next move to this - children should subtract and record by (reduction) by physically crossing out – how many left?



This will support children when partitioning and using part-whole models, bar models and tens frames to represent this. These models support teaching the children about the inverse and the relationship between addition and subtraction (the cubes as bars and bar models also support finding the difference)



Subtracting using number tracks and number lines

Children will then subtract using a number track initially. This can be made more concrete by placing items on a track and physically removing them.



Next they will count back in ones on a numbered number track then number line from the largest number to the smallest number in the calculation.

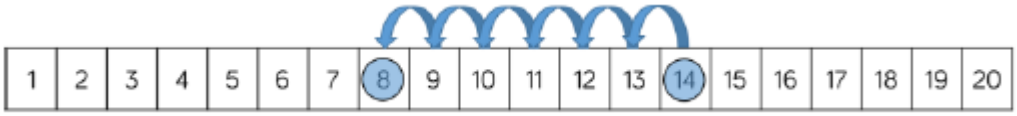


(this also represents finding the difference)

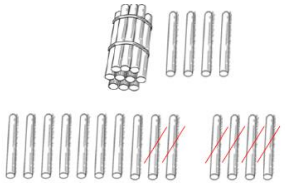
Year 1/2

Skill: Subtract 1 and 2-digit numbers to 20

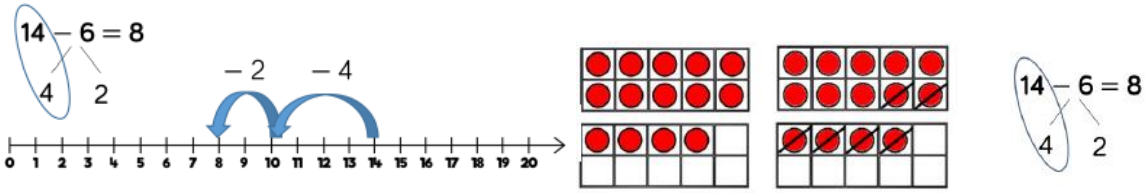
Children will use number tracks and lines to count back in ones from the largest number to the smallest number.



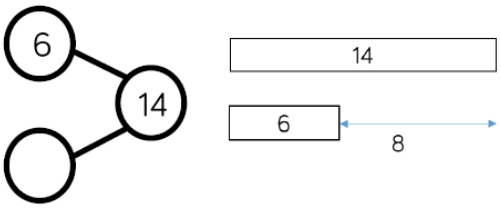
Children should be encouraged to find the number bond to 10 when partitioning the subtracted number. Numicon, tens frames, straw bundles and number lines are particularly useful for this. **Children being fluent with number bonds within 10 is important here.**



This is how we would present this to children and expect for it to be seen like this in children's work.



We will use part whole models and bar models to represent this as well – once children have worked through the steps above.

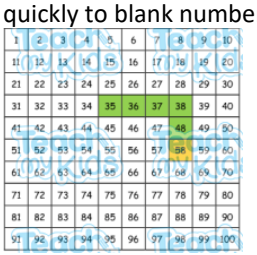


Year 2

Skill: Subtract 1 and 2-digit numbers to 100

At this stage the aim within this step is for children to eventually use the formal column method alongside straws, Base 10 or Place Value counters. As numbers become larger, straws become less efficient.

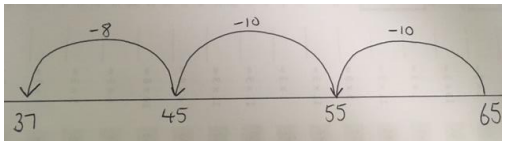
100 squares can be used to show subtracting tens and then ones but the aim is for the children to move quickly to blank number lines alongside concrete resources.



58 – 23 = 35

Children will use **blank number lines** to count back to subtract.

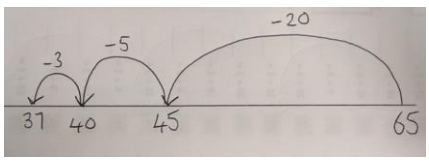
65 – 28 = 37



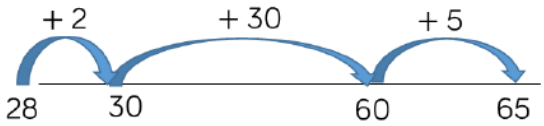
They might begin to jump back in tens and then ones.

We need to encourage them to jump in multiples of 10 to be more efficient.

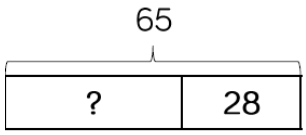
Following this, children should **bridge through 10** – children need to know number bonds to support this.

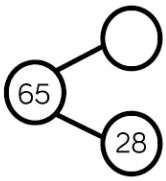


Blank number lines should also be used to **find the difference** by counting on.



Children should be exposed to a range of representations to understand **'difference between'** e.g. bar models, part whole models and missing box questions.





"37 is the difference between 28 and 65"

65 - ☐ = 28 28 = 65 - ☐

Expanded Column Method

Children should be taught to use expanded column method with no exchange first. This is to ensure children understand the format of the method.

The expanded column method is a stepping stone towards the compact column method. It should be taught practically, using Base 10 apparatus, before children start to record it. Include numbers where zero is a placeholder (e.g. 504 – 173).

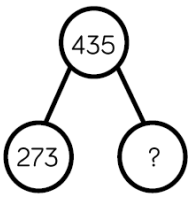
Year 3

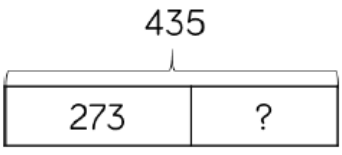
Skill: Subtract numbers with up to 3 digits

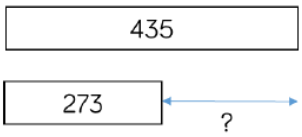
Base 10 and Place Value counters are the most effective manipulative when subtracting numbers with up to 3 digits.
Ensure children write down their calculation alongside any concrete resources so they can see the links to the written column method.

435 – 273 = 262

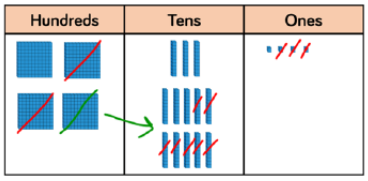
Children should be exposed to a range of representations to understanding 'difference between' e.g. bar models, part whole models and missing box questions.



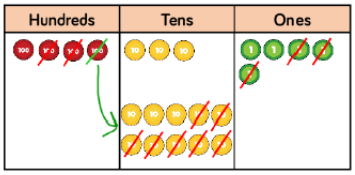




435 - ☐ = 262 262 = 435 - ☐



$$\begin{array}{r} {}^{3}\cancel{4}^{1}35 \\ -\ 273 \\ \hline 262 \end{array}$$



(see below for guidance on teaching column method)

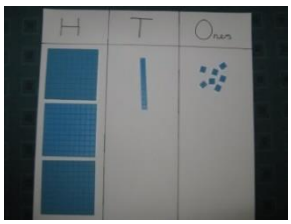
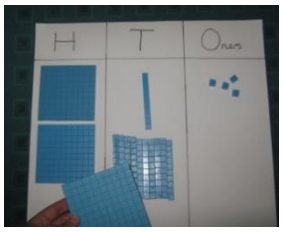
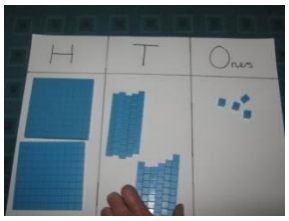
Expanded Column Method

Children should be taught to use expanded column method with no exchange first. This is to ensure children understand the format of the method.

Exchange

The **expanded column method** is a stepping stone towards the compact column method. It should be taught practically, using Base 10 apparatus, before children start to record it. Include numbers where zero is a placeholder (e.g. 504 – 173).

e.g. 317 – 263 = 54

	H T Ones 300 10 7 - 200 60 3	Children create the number that they will be taking away from, using Base 10 and place it on a place value mat.
	H T Ones 200 ~~300~~ 110 7 - 200 60 3 4	Starting with the ones, children take away 3 from the 7 ones. Moving onto the tens, children realise that they cannot take six tens from one ten so they exchange a hundred for ten tens. It is important that children do this physically.
	H T Ones 200 ~~300~~ 110 7 - 200 60 3 0 50 4	Children can now remove 6 tens from 11 tens and then remove the two hundreds. Children will be left with their answer.

Compact Column Method

This is the formal standard method of subtraction. This should only be taught when children are completely confident in using the expanded column method and can prove this using base ten apparatus.

563 – 271 = 292

$$\begin{array}{r} {}^{4}\cancel{5}^{1}6\ 3 \\ -\ 2\ 7\ 1 \\ \hline 2\ 9\ 2 \end{array}$$

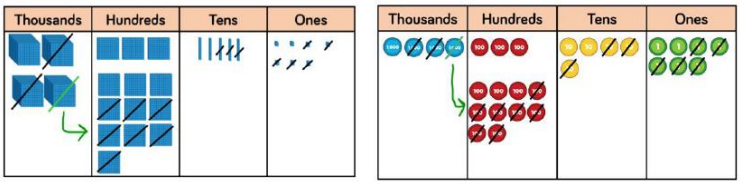
It is important that children say "16 tens take 7 tens" not "16 -7". Use the term "exchange" not borrow.

Year 4

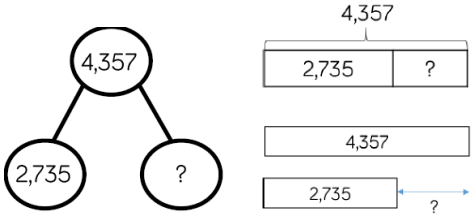
Skill: Subtract numbers with up to 4 digits

Base 10 and Place Value counters are the most effective manipulative when subtracting numbers with up to 4 digits.
Ensure children write down their calculation alongside any concrete resources so they can see the links to the written column method.

$$4{,}357 - 2{,}735 = 1{,}622$$



$$\begin{array}{r} {}^{3}\not{4}\,{}^{1}357 \\ -\ 2735 \\ \hline 1622 \end{array}$$



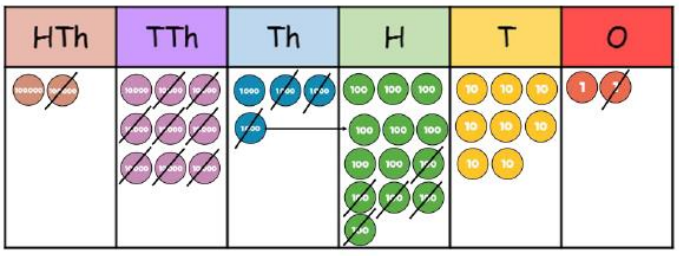
Year 5/6

Skill: Subtract numbers with more than 4 digits

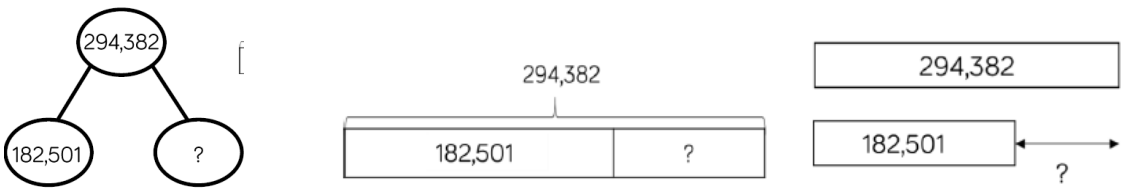
Base 10 and Place Value counters are the most effective manipulative when subtracting numbers with more than 4 digits.

At this stage children should be encouraged to work in the abstract, using the column method to subtract larger numbers efficiently.

$$294{,}382 - 182{,}501 = 111{,}881$$



	2	9	$\not{3}$	$^{1}3$	8	2
−	1	8	2	5	0	1
	1	1	1	8	8	1

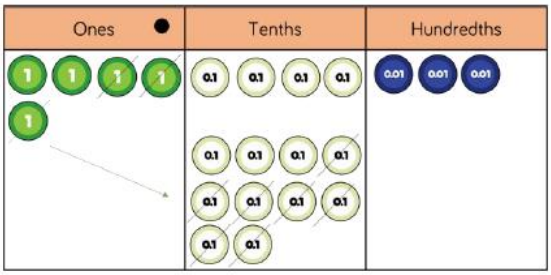


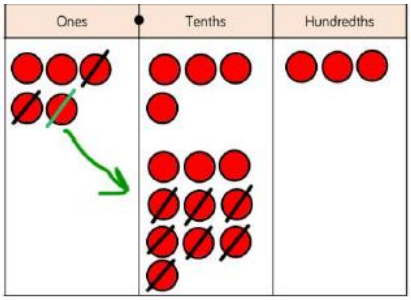
Year 5/6

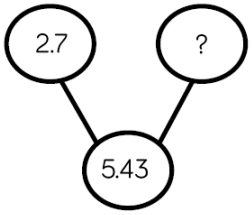
Skill: Subtract numbers with up to 3 decimal places

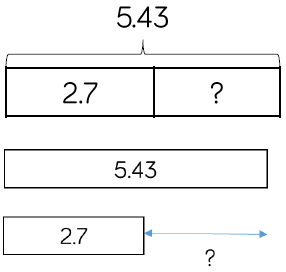
Place value counter and plain counters on a place value grid are the most effective manipulative when subtracting decimals wit 1, 2 and then 3 decimal places.
Ensure the children have experience of subtracting decimals with a variety of decimal places. This includes putting this into context when subtracting money and other measures.

$$5.43 - 2.7 = 2.73$$









$$\begin{array}{r} {}^{4}\cancel{5}.{}^{1}43 \\ -\ 2.7 \\ \hline 2.73 \end{array}$$