| Addition |
|---|

All methods follow the Maths No Problem progression and these methods are cycled through for adding ones, then adding tens, hundreds, thousands and ten thousands. The target method is the end product. When renaming is introduced, this is taught using dienes first before moving onto formal methods.

Method 1 – Place value counters and number line to count on

Children use structured number lines to count on in ones or multiples of a chosen number, using place value counters to support.

Note: Counting on is a simple method but importantly a pre-requisite for further methods.
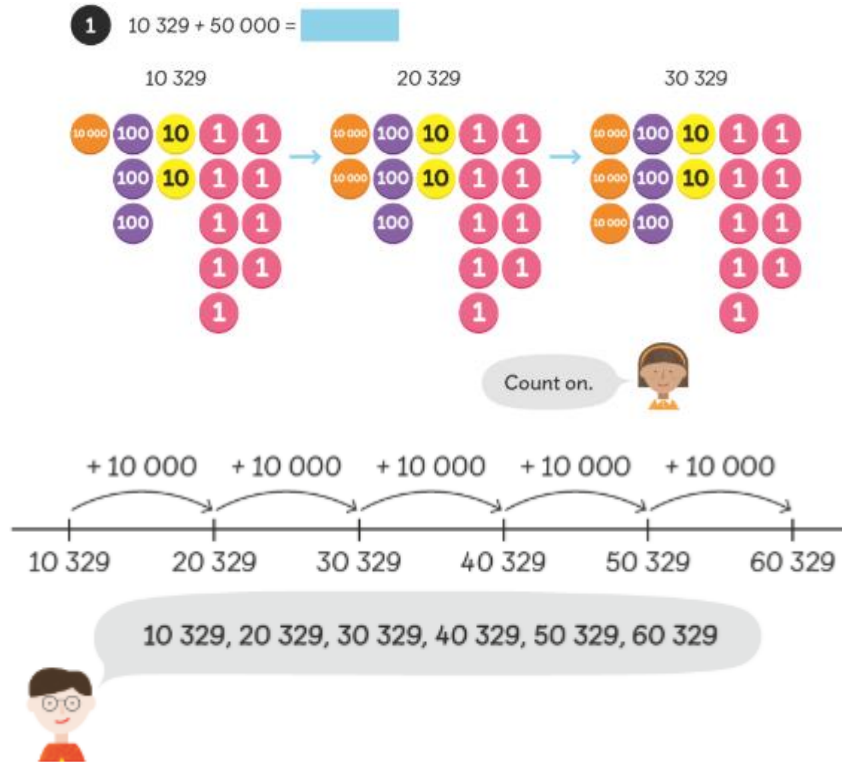
Method 2 – Rounding to get an estimate.

Children to use their understanding of rounding to help them get an estimate to the calculation. It is important children feel confident with this so they are able to independently check that their answer makes sense.

Method 3 – Using place value to support column addition.
It is important at this stage that children use their understanding of place value teaching to help with column addition. They should become confident in noticing which part of a number is going to change e.g. in the problem below, it is just the thousands and ten thousands columns that will change. The hundreds, tens and ones will remain as zeros. This also helps them to become more efficient with mental calculations and arithmetic calculations.

Method 4 – Column addition supported with place value counters.
When working with column addition, children are to use place value counters to support their understanding of the method. It is particularly important they can manipulate counters so they understand the reason we need to carry numbers into the next column.

TARGET METHOD – COLUMN ADDITION
All children need to have secured learning in the previous methods to be able to access formal column addition with understanding. **This is not to be taught without understanding e.g. as a process only.** All children must have secured the place value understanding and able to use the previous methods to support column. Throughout teaching it is vital to refer to the column name/value. For example 57 + 23 would be discussed as "7 ones add 3 ones." Then, "5 tens add 2 tens." Or "fifty add thirty." The values should never be referred as an individual digit; they must always have a reference to the tens, hundreds, thousands and ten thousands place value.

If children are struggling take them back to earlier methods. Use dienes alongside the column method so children can visually see the relationship – this is key for renaming.

Subtraction
All methods follow the Maths No Problem progression and these methods are cycled through for subtracting ones, then subtracting tens, hundreds, thousands and ten thousands. The target method is the end product. When renaming is introduced, this is taught using dienes first before moving onto formal methods.

| **Method 1 – Counting backwards** |
|---|
| Children use a combination of structured number lines, place value counters and oral counting to count back from a given number. They can do this in 1's/10's/100's/1000's and then multiples of the same. |
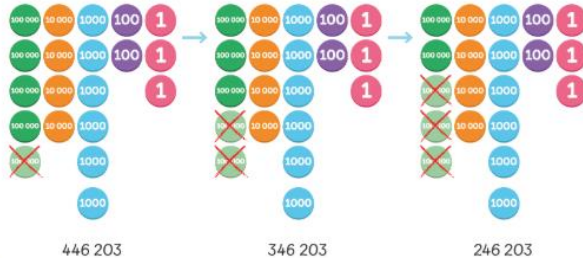
Method 2 –Use of place value counters to help show renaming.
Children need to grasp a firm understanding of the process of renaming, using place values to support the method. They will use their place value understanding to help them spot where a higher numbers e.g. ten thousands, can be renamed e.g. into thousands, to help with a subtraction method. This will then get represented with the column method to show the written process of renaming.
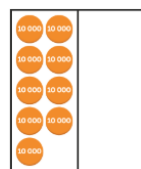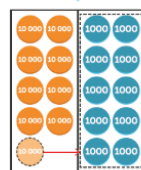
Method 3 – Partitioning

Children need to use partitioning alongside knowledge of thousands, hundreds, tens and ones, to be able to partition appropriately. Children identify the numbers that are being partitioned and then subtracted. This method creates a strong link with mental fluency and is a pictorial representation of what we are doing in our heads.

TARGET METHOD – COLUMN SUBTRACTION

All children need to have secured learning in the previous methods to be able to access formal column subtraction with understanding. **This is not to be taught without understanding e.g. as a process only.**
All children must have secured the place value understanding and able to use the previous methods to support column.

Throughout teaching it is vital to refer to the column name/value. For example 57-23 would be discussed as "7 ones take away 3 ones." Then, "5 tens take away 2 tens." Or "fifty subtract thirty."
The tens and hundreds should never be referred as an individual digit, must always have a reference to the tens and hundreds place value.

If children are struggling take them back to earlier methods. Use dienes alongside the column method so children can visually see the relationship – this is key for renaming.

Multiplication

All methods follow the Maths No Problem progression within the textbooks and link to the National Curriculum. The understanding of equal groups is crucial for successful learning in multiplication and then division chapters. Throughout this chapter, it is well worth supporting learning with:

- Times Tables Rockstars
- Hit the Button
- Squeebles

SHORT MULTIPLICATION

Method 1: grouping

Children need to understand that multiplication is the notion of equal groups, however many times. Maths No Problem begins learning with a lesson on equal groups to establish this understanding. Additional time is well spent here to secure understanding. Children are expected to discuss and generate multiple representations of equal groups.
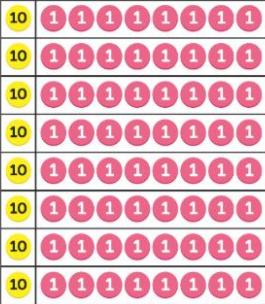

Method 2 – The ladder model

Children should apply their place value and partitioning understanding to multiplication through the ladder model (revision of year 4). They will partition a number into its separate parts and then multiply each by the number they are multiplying by. This gets represented as a ladder model and then is added up at the end.
It will then be shown as a longer example to the short multiplication method. (Children must have secure place valule understanding to use this method effectively).

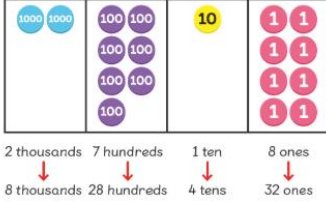## TARGET METHOD –SHORT MULTIPLICATION METHOD

All children need to have secured learning in the previous methods to be able to access formal short multiplication method with understanding. **This is not to be taught without understanding e.g. as a process only.**

All children must have secured the place value understanding and able to use the previous methods to support column.

Throughout teaching it is vital to refer to the column name/value. For example 23 x 2 would be discussed as "3 ones multiplied by 2 ones." Then, "2 tens multiplied by 2 ones."

The tens should never be referred as an individual digit, must always have a reference to the tens place value.

If children are struggling, take them back to earlier methods. Use dienes alongside the column method so children can visually see the relationship.

LONG MULTIPLICATION

Method 1 – partitioning

Children are to use their understanding of partitioning to help them with the long multiplication method. They partition the number they are multiplying by into tens and ones and then multiply by each, adding the answers together at the end. This will lead into the children understanding the second row of the long multiplication method needing to be ten times bigger due to multiplying by a tens number.

TARGET METHOD – LONG MULTIPLICATION METHOD

All children need to have secured learning in the previous methods to be able to access formal long multiplication method with understanding. **This is not to be taught without understanding e.g. as a process only.**

All children must have secured the place value understanding and able to use the previous methods to support column.

Throughout teaching it is vital to refer to the column name/value. For example 23 x 2 would be discussed as "3 ones multiplied by 2 ones." Then, "2 tens multiplied by 2 ones."

The tens should never be referred as an individual digit, must always have a reference to the tens place value.

If children are struggling, take them back to earlier methods. Use dienes alongside the column method so children can visually see the relationship.

| Mental fluency |
|---|
| All children must learn and have instant recall of all their tables facts up to 12x12.
This is NOT counting in multiples of that number.

To solve division questions the children need to have a good understanding of the fact families that relate to their known times tables. With this knowledge, they can quickly put together the four related facts and identify the division fact.

If children are still unsure, they should use a drawn representation however be aware these are often inefficient and will take time to draw and complete. |

Division

All methods follow the Maths No Problem progression within the textbooks and link to the National Curriculum. The understanding of equal groups is crucial for successful learning in multiplication and then division chapters. Throughout this chapter, it is well worth supporting learning with:

- Times Tables Rockstars (automatically includes division questions)
- Hit the Button (doubles and halves)
- Squeebles (division option)

Method 1 –Partitioning

Children need to use partitioning alongside knowledge of place value to be able to divide appropriately. Children use the method to partition the dividend into thousands, hundreds, tens and ones and then divide each part by the divisor. This method creates a strong link with mental fluency and is a pictorial representation of what we are doing in our heads.
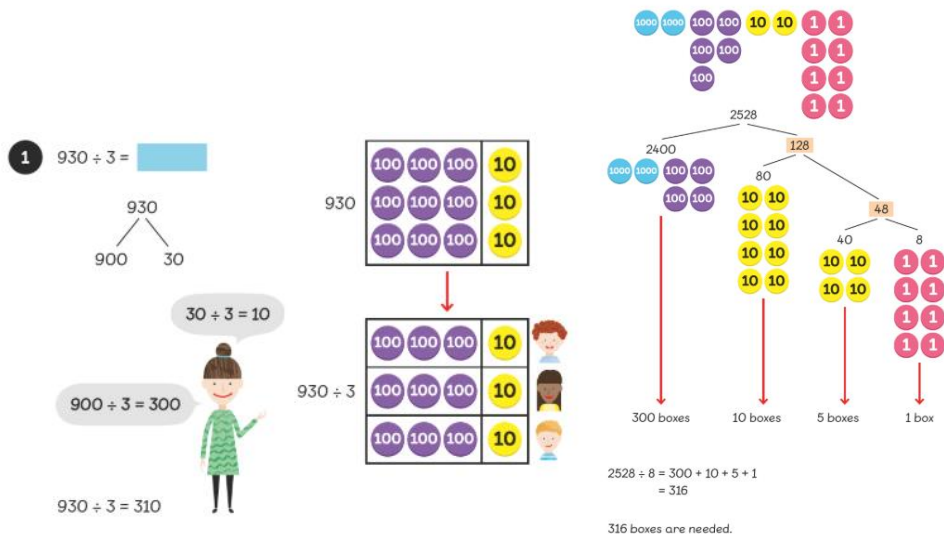
TARGET METHOD – short division method for whole answers and answers with remainders.

All children need to have secured learning in the previous methods to be able to access formal short division method with understanding. **This is not to be taught without understanding e.g. as a process only**.

Throughout teaching it is vital to refer to the column name/value. The tens should never be referred as an individual digit, must always have a reference to the place value.
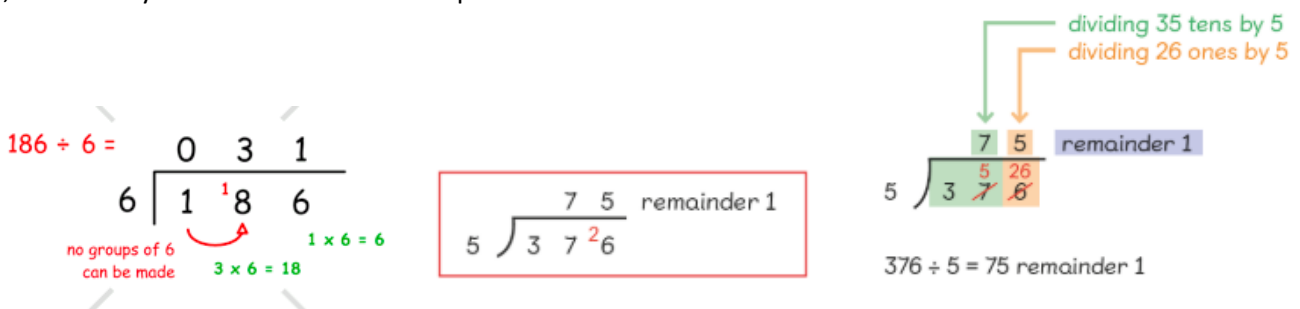
If children are struggling, take them back to earlier methods. Use dienes alongside the division method so children can visually see the relationship.

Number fluency.

All children must learn and have instant recall of all times table facts up to 12x12.
This is NOT counting in multiples of that number.

To solve division questions the children need to have a good understanding of the fact families that relate to their known times tables. With this knowledge, they can quickly put together the four related facts and identify the division fact.

If children are still unsure, they should use a drawn representation however be aware these are often inefficient and will take time to draw and complete.