

# Subtraction

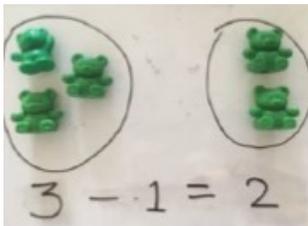
## Early Years

Pupils should be able to:

- know more than one number
- using quantities and objects, they subtract two single-digit numbers and count back to find the answer

### Finding One Less than a Number

Use of everyday objects, cubes and counters to find one less than any given number to 20



Children can use pegs to physically remove to find one less than a number



Children should be taught to recognise the new number by shape

Use of pictorial representations to find one less than a number by crossing out



Use of a number track and a counter or white-board pen to count back one less



One less

Use of mental maths to count back from the biggest number one less

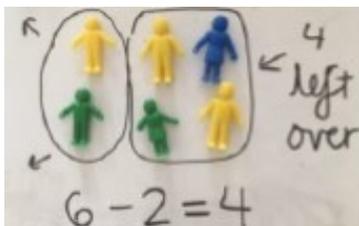
8...7

One less than 8 is 7



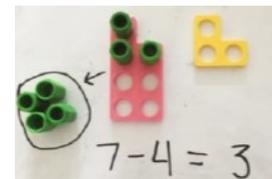
### Subtracting Two Single-Digit Numbers

Use of everyday objects, cubes and counters to subtract



Children will start by removing the smaller amount and then

Use of Numicon and pegs to physically remove smaller amount and counting how many left over

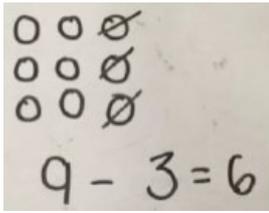


Children to recognise number by shape

### Vocabulary

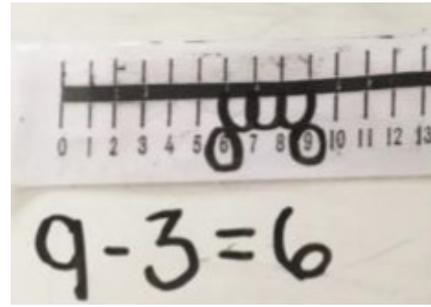
subtraction, subtract, take away, minus, less, backwards

Children draw and make use of pictorial representations to cross out and count back



Children begin by counting all left over then moving on to counting back from the biggest number

Use of a numbered line to count back from the biggest number



**Vocabulary**

subtraction, subtract, take away, minus, less, backwards

# Subtraction

## Year 1

Pupils should be able to:

- read, write and interpret mathematical statements involving subtraction
- represent and use all number bonds within 20
- subtract one-digit and two-digit numbers within 20, including 10
- solve one-step problems that involve subtraction using concrete objects and pictorial representations and missing number problems

### Subtracting One and Two Digits

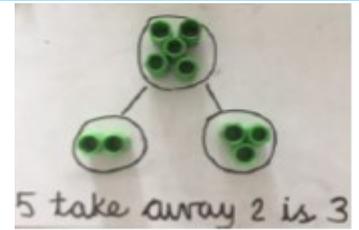
Use of cubes to represent bar model and part-part whole model

5 take away one is 4

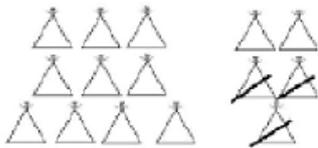
$$5 - 1 = 4$$

5 take away 2 is 3

$$5 - 2 = 3$$

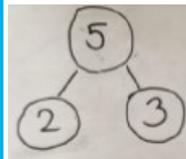


Children draw or use pictures to physically cross out smaller amount and count how many left over



$$15 - 3 = 12$$

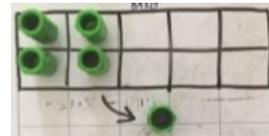
Abstract part-part whole model alongside calculation



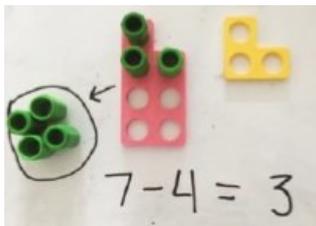
2 and 3 make 5

so 5 take away 2 is 3

Use of ten frames to subtract single digits

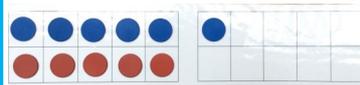


Use of Numicon and pegs as previously use in EYFS



Use of ten frames to subtract numbers within 20

$$11 - 5 = 6$$



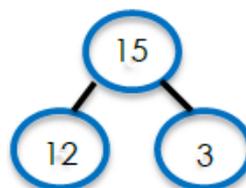
Children should be taught to count back when counting how many left is secure

Children use pictorial representations to cross out the smaller number using Numicon before moving on to record this abstractly

$$15 - 12 = 3$$



Children can record this using the part-part whole model



$$15 - 12 = 3$$

### Vocabulary

subtraction, subtract, take away, minus, less, backwards

Children move onto counting back mentally

$$15 - 7 = 8$$

15...14, 13, 12, 11, 10, 9, 8



### Renaming to Make 10

Show children both the following ways

Use of ten frames with concrete objects to subtract to make ten first and then subtract the left over amount

Use of ten frames to partition the larger number and then subtract the amount from 10

$$12 - 7 = 5$$

12 is 10 and 2

Take away 7 from 10 = 3

and then add 2 to 3 = 5

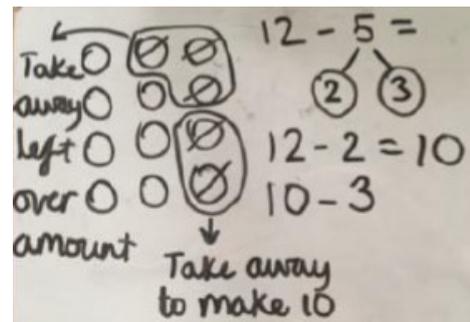
Show children both the following ways

Use knowledge of number bonds to partition smaller number to make ten first

Use of number bonds to partition the larger number and then subtract the amount from 10

Use pictorial strategies to support subtracting through number bond knowledge and subtracting

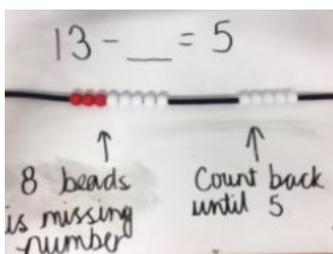
When children are secure, they can move on to use of mental strategies



### Missing Number Problems

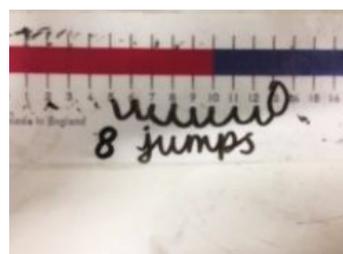
Children begin by using concrete objects to support in finding the missing number

$$13 - \underline{\quad} = 5$$



Children can then use the support of a number line to support in finding missing numbers

$$13 - \underline{\quad} = 5$$



Children can then move on to mentally counting back to find the missing number. Children will need to count back to the "answer" while keeping tally of "how many" they have counted back

13...12, 11, 10, 9, 8, 7, 6, **5**

I counted back till I landed on 5. I counted back 8 jumps in total so the missing number is 8

### Vocabulary

subtraction, subtract, take away, minus, less, backwards

# Subtraction

## Year 2

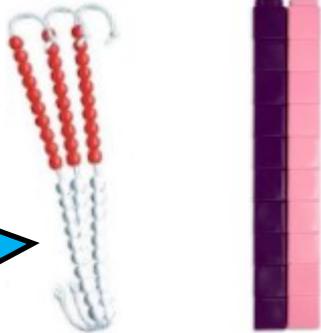
Pupils should be taught to:

- solve problems with subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100
- subtract numbers using concrete objects, pictorial representations and mentally, including:
  - a two-digit number and ones
  - a two-digit number and tens
  - 2 two-digit numbers
- show that subtraction is not commutative as addition is
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems

### Subtracting a Two-Digit Number and Ones

Use of practical apparatus to support subtraction such as bead strings or unifix / multi-link cubes

$$37 - 5 = 32$$



Children can use unifix in blocks of tens and ones so can physically remove when subtracting

Use of part-part whole concept so children partition to use knowledge of number bonds to support subtraction as well as subtracting to near 10s

$$16 - 8 =$$

$$16 - 6 = 10$$

$$10 - 2 = 8$$

Also show partitioning of 16 into 10 and 6

Subtract 8 from 10 = 2 then add 2 and 6

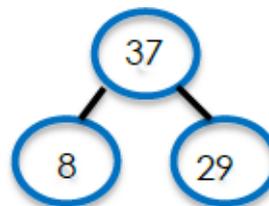
Mentally counting back from the biggest number using partitioning and part-part whole model

37...36...35...etc

$$37 - 8 =$$

$$37 - 7 = 30$$

$$30 - 1 = 29$$



### Vocabulary

subtraction, subtract, take away, minus, less, backwards, inverse

## Subtracting Tens from a Number

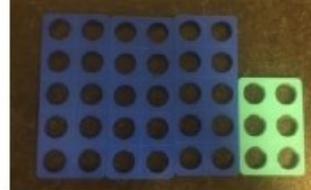
Use of practical apparatus to support subtracting

Bead strings

$$46 - 10 = 36$$

$$36 - 10 = 26$$

Numicon

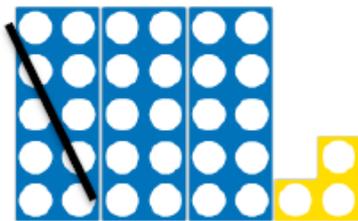


Base 10

Hundred square

Use of pictorials in books and children's jottings to support subtracting tens

Children physically cross out



Mentally subtracting ten from a number. Children to use knowledge of patterns to subtract tens

$$35 - 10 = 25$$

Children can explain the pattern they noticed

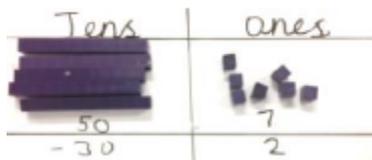
I noticed that the ones digit stays the same when I subtract ten

## Subtracting Two Two-Digit Numbers

Use Base 10 to subtract

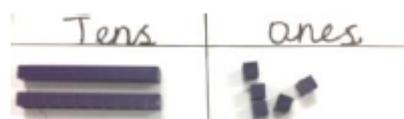
Subtract the ones first then the tens

$$57 - 32 = 25$$



Physically take away:

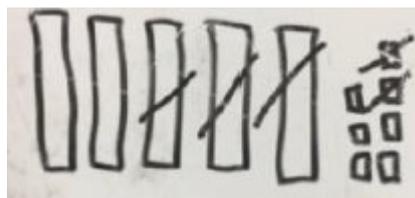
to leave



Use of children's drawings / images of Base 10 to support understanding

Children physically cross out

$$57 - 32 = 25$$

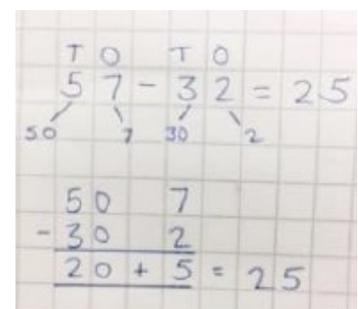


No renaming

Use of the partitioning method to subtract

$$57 - 32 = 25$$

- partition the two-digit numbers
- arrange in a column
- subtract the ones
- subtract the tens

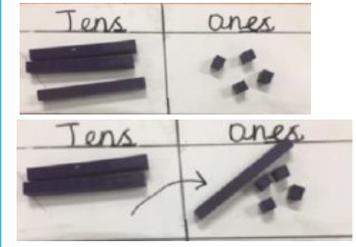


## Vocabulary

subtraction, subtract, take away, minus, less, backwards, inverse

**With renaming**

Use of Base 10 to subtract  
Subtract the ones first. Must rename in order to subtract the ones. Take a ten and exchange it for 10 ones in the ones column.  $34 - 17 =$

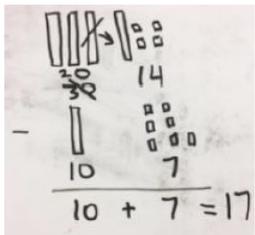


Now subtract the ones, then the tens.



Use of children's / images of Base 10 to support understanding

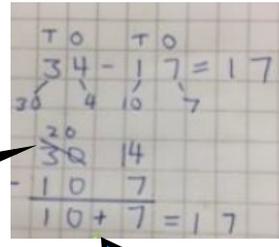
$34 - 17 =$   
Children draw or use pictures of Base 10 to physically cross out / draw when subtracting



Children must cross out and place new tens number above

Use of the partitioning method to subtract

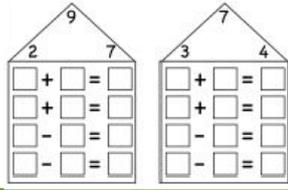
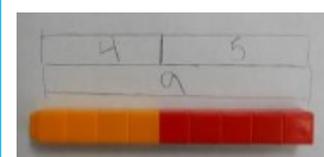
- partition the two-digit numbers
- arrange in a column
- rename the tens if cannot subtract the ones
- subtract the ones
- subtract the tens
- recombine



Ensure children do not subtract when recombining

**Using the Inverse**

Children use a bar model to support understanding that addition is commutative (can be done in any order) but subtraction is not



Show physically even if they don't necessarily draw this

Children use knowledge of subtraction sentences to say related addition facts

If I know that ...  
 $20 + 21 = 41$  then I also know that  
 $41 - 21 = 20$  etc

To solve missing number problems

Children move away from counting on / back to find the missing number to rearranging the number sentence and using the inverse

$55 + \underline{\quad} = 75$   
 $75 - 5 =$

Children need to pay close attention on how to reorder the number sentence

Children should understand commutativity of addition when using the inverse

$\underline{\quad} - 25 = 42$   
 $42 + 25 =$   
 $25 + 42 =$

However, starting with the larger number is more efficient

Children understand the relationship between addition and subtraction by using the inverse to check calculations are correct

$$\begin{array}{r} \text{T O} \quad \text{T O} \\ 57 - 32 = 25 \\ \hline \begin{array}{r} 50 \quad 7 \\ - 30 \quad 2 \\ \hline 20 + 5 = 25 \checkmark \end{array} \end{array}$$

$$\begin{array}{r} \text{T O} \quad \text{T O} \\ 32 + 25 = 57 \\ \hline \begin{array}{r} 30 \quad 2 \\ + 20 \quad 5 \\ \hline 50 + 7 = 57 \end{array} \end{array}$$

**Vocabulary**

subtraction, subtract, take away, minus, less, backwards, inverse

# Subtraction

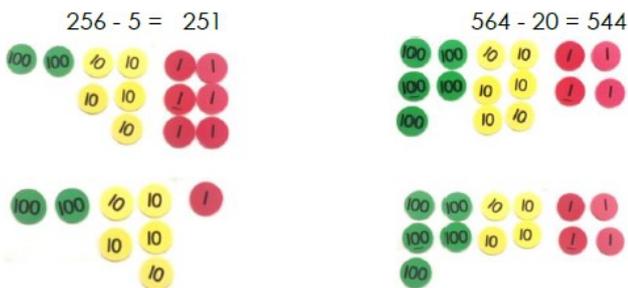
## Year 3

Pupils should be taught to:

- subtract numbers mentally, including:
  - a three-digit number and ones
  - a three-digit number and tens
  - a three-digit number and hundreds
- subtract numbers with up to 3 digits, using formal written methods of column addition
- estimate the answer to a calculation and use inverse operations to check answers
- solve problems, including missing number problems, using number facts, place value and more complex addition and subtraction

### Subtracting Mentally

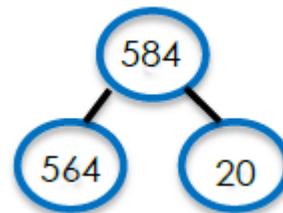
Use of place value counters and Base 10 to support subtracting mentally—exchanging / renaming when necessary



Use the language of place value e.g. six tens

Counting back from the largest number in ones, tens and hundreds.

Use bar models and part-part whole models to show understanding



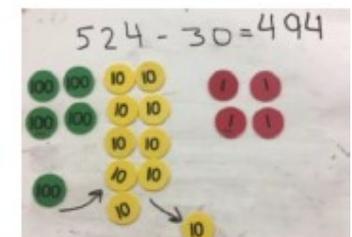
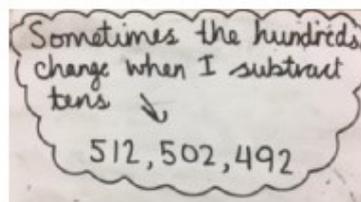
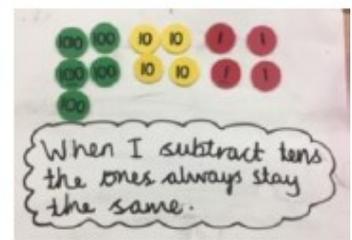
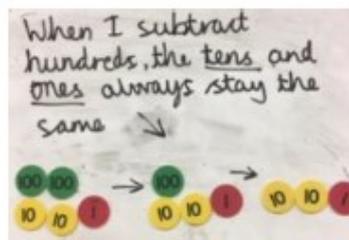
Children should explain understanding of patterns to support counting back mentally

What happens when I subtract tens?

Hundreds?

Ones?

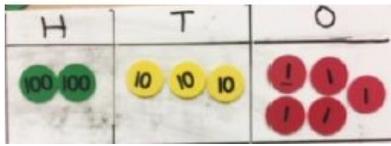
What about when crossing hundreds and tens boundaries?



**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

## Subtracting Three-Digit Numbers - Partitioning Method

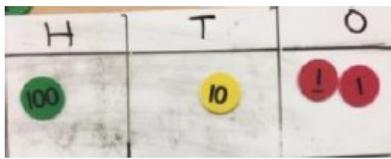
$$235 - 123 =$$



$$\begin{array}{r} - 123 \\ 235 \\ \hline \end{array}$$

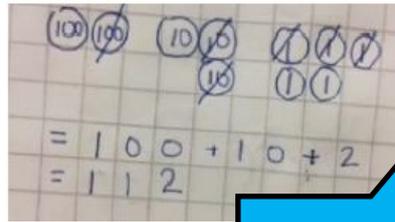
Use of place value counters or Base 10 to support subtraction

Physically remove counters to find answer



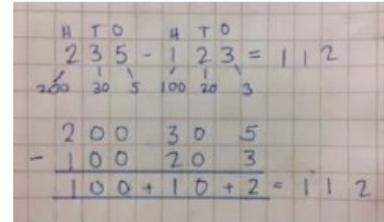
Support pictorially through drawings

$$235 - 123 =$$



No renaming

$$235 - 123 =$$

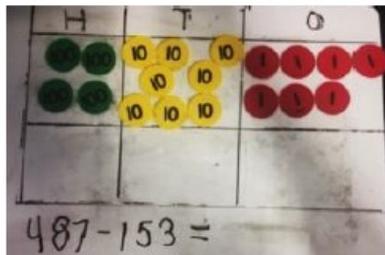


With renaming

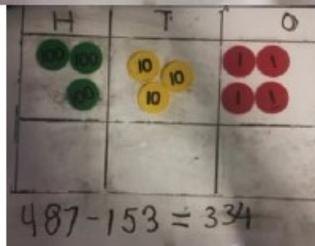
## Subtracting Three-Digit Numbers - Compact Columnar Method

Column method with place value counters or Base 10

$$487 - 153 =$$



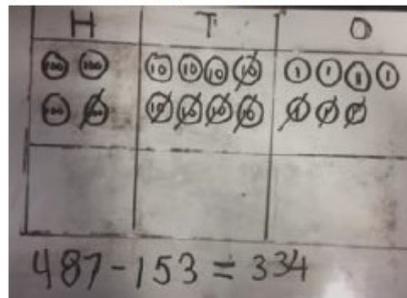
$$487 - 153 =$$



$$487 - 153 = 334$$

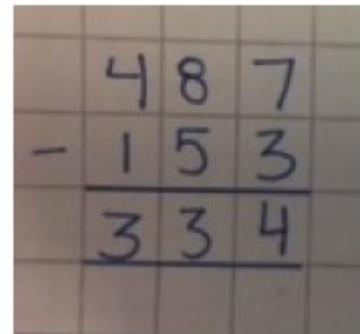
Children drawing pictures of place value counters or Base 10 in the column method

$$487 - 153 =$$



Formal column method involving no renaming

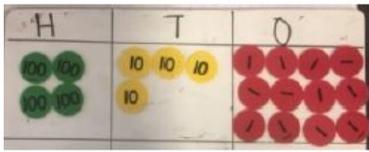
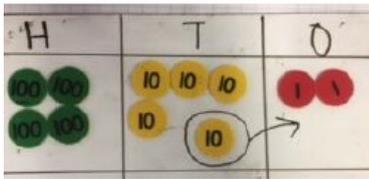
$$487 - 153 =$$



**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

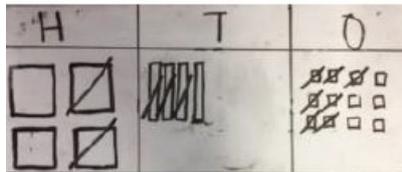
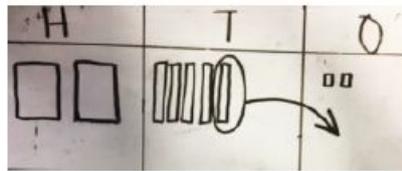
Partitioning place value counters or Base 10

$$452 - 237 =$$



Children drawing pictures or using the support of images in the column method—exchanging tens for ones where necessary

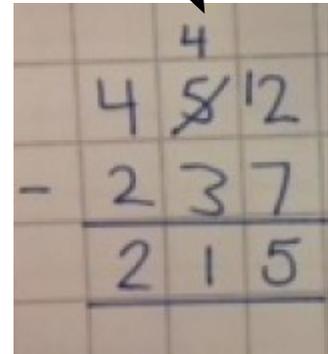
$$452 - 237 =$$



Formal column method

$$452 - 237 =$$

Renaming above



With renaming

**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

# Subtraction

## Year 4

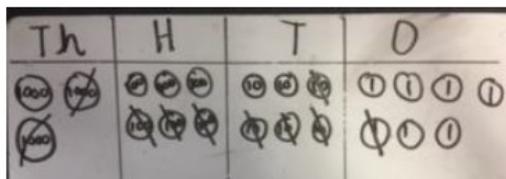
Pupils should be taught to:

- subtract numbers with up to 4 digits using the formal written methods of column subtraction

### Compact Columnar Subtraction

Children can use concrete or draw a pictorial representation of the columns and place value counters. Can physically cross out in books to solve

$$3667 - 2341 = 1326$$

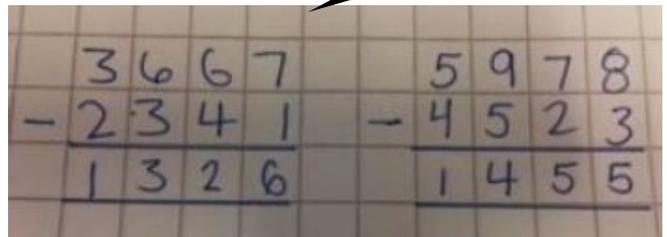


Formal column method involving no renaming

$$3667 - 2341 =$$

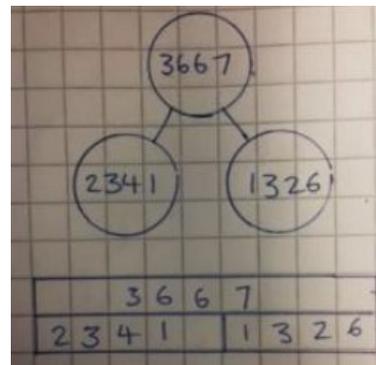
$$5978 - 4523 =$$

No renaming



Children should be able to represent their understanding of addition and subtraction within a bar model and a part-part whole model

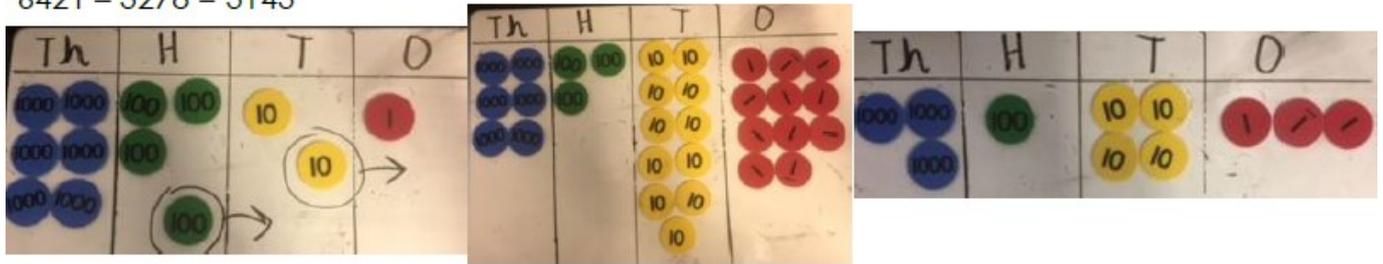
Children should be able to explain that they are finding a whole or a total when adding



**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

Children can use or draw a pictorial representation of the columns and place value counters

$$6421 - 3278 = 3143$$

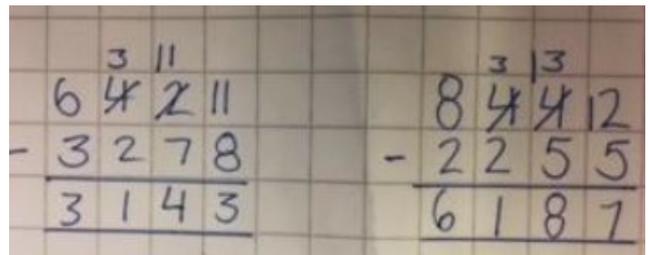


Formal column method involving renaming above. Insist on using language of place value.

Reminding children of place value—is this a ten or a one I'm renaming?

$$6421 - 3278 =$$

$$8442 - 2255 =$$

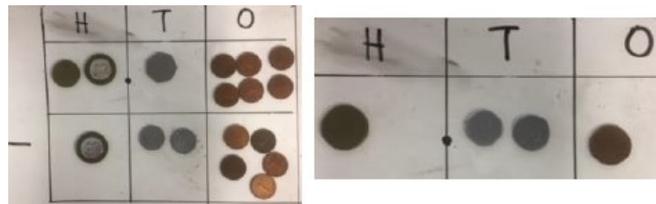


### Subtraction with Decimals

Children use coins to subtract two decimal amounts to find the change.

Write down decimal point first

$$£3.56 - £2.45 = £1.11$$



No renaming

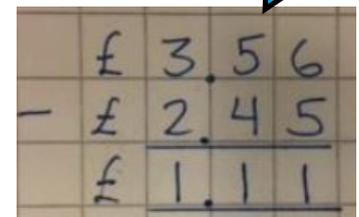
Formal column method with decimals in different contexts including money

$$£3.56 - £2.45 = £1.11$$

Write down decimal point first in answer

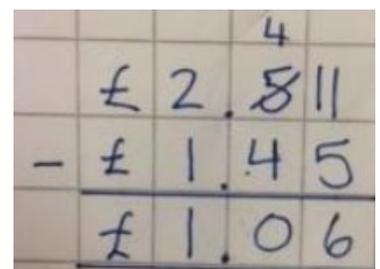
The decimal point needs to be lined up like all the other place value columns

It is important children realise that they are subtracting tenths and hundredths and that they are subtracting part of a number not a whole number



$$£2.51 - £1.45 = 1.06$$

Renaming



**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

# Subtraction

## Year 5

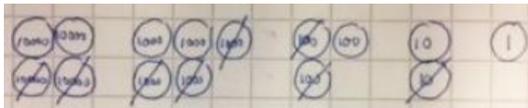
Pupils should be taught to:

- subtract numbers with more than 4 digits using the formal written methods of column subtraction

### Columnar Subtraction

Children should use the column method when subtracting tens of thousands and hundreds of thousands. As with previous years, children should use place value counter images and drawings to support subtraction

More than 4 digits



$$\begin{array}{r} 45321 \\ - 23210 \\ \hline 22111 \end{array}$$

Using previous imagery with place value counters to support renaming

Renaming above

$$\begin{array}{r} 4 \\ 481288 \\ - 24632 \\ \hline 20656 \end{array}$$

### Columnar Subtraction with Decimals

Zero (0) should be used as a place holder to ensure that the numbers are to the same decimal place. Zero is added to show there is no value to subtract.

Give children examples with the place holder at the top as well as at the bottom.

$$\begin{array}{r} 39.78 \\ - 23.30 \\ \hline 16.48 \end{array}$$

↑ Add the place holder

It is important that children recognise that they are subtracting tenths and hundredths and that they are subtracting part of a number not a whole number

$$\begin{array}{r} 2 \\ 28.136 \\ - 0.70 \\ \hline 22.66 \end{array}$$

→ add the place holder

**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

## Columnar Subtraction with Decimals in a Range of Contexts

Formal column method is used to solve problems in the context of measure, e.g. weight and money

The decimal point needs to be written down first in the answer and lined up like all the other place value columns

$$\begin{array}{r} 3 \ 10 \\ 41.14 \text{ kg} \\ - 26.6 \text{ kg} \\ \hline 14.8 \text{ kg} \end{array}$$

Chil-  
should

Renaming above

$$\begin{array}{r} 0 \\ £ 10.25 \\ - £ 9.24 \\ \hline £ 1.01 \end{array}$$

dren  
use actual

**Vocabulary** subtraction, subtract, take away, minus, less, backwards, inverse, subtrahend (amount being taken away) minuend (the quantity from which another will be subtracted), difference

