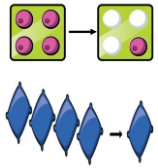
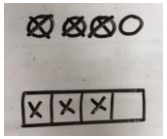
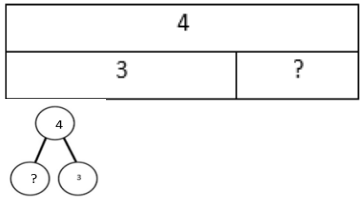
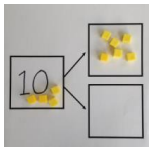
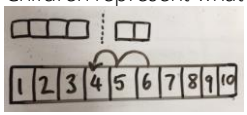
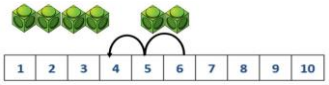
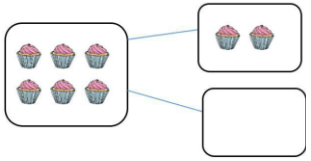
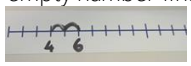
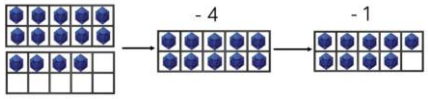
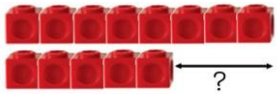
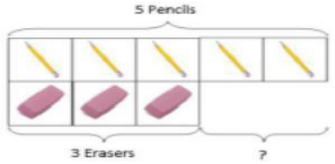
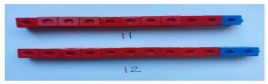
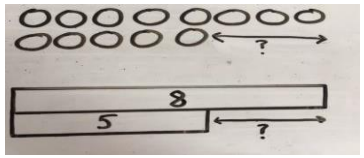
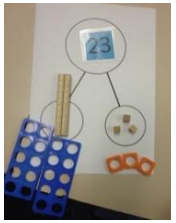
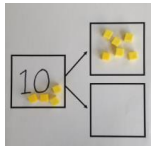
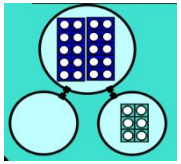
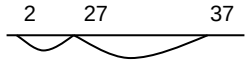
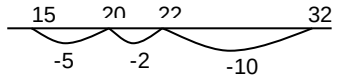
# Subtraction at Milverton

| Year | Concrete | Pictorial | Abstract |
|---|---|---|---|
| EYFS | **Physically taking away and removing objects from a whole** | | |
| | Use physical objects, counters and cubes to show how objects can be taken away.<br>4 – 3 =1<br>  4-2 = 2  | Children to draw the concrete resources they are using and cross out the correct amount. The bar model can also be used.<br>    | 4 – 3 =<br>□ = 4 - 3 |
| Year 1 | **1 digit subtraction** | | |
| | <u>Counting back</u><br>Make the larger number in your subtraction. Move the beads along the string as you count backwards.<br>  13 – 4 =<br>Use counters and move them away from the group as you count them.<br>  <br><u>Part Part whole</u><br>10 - 6<br>   | Children represent what they do pictorially.<br>   6 -2 = 4<br>  <br>count back on a number line or track<br>  <br>  | Put 13 in your head and count back 4. What number are you at now?<br>Children to represent the calculation on a number line or track and show their jumps. Encourage children to use an empty number line.<br>  <br>Children should be able to use their subtraction skills to work out the following type of missing number calculations.<br>7 - 3 = □ □ = 7 - 3<br>7 - □ = 4 4 = □ - 3<br>□ - 3 = 4 4 = 7 - □<br>□ - △ = 4 4 = □ - △ |
| | **Make 10** | | |
| | Use ten frames<br>14-5<br>   | Children to present the ten frame pictorially and discuss what they did to make 10.<br>  | Children to show how they can make 10 by partitioning the subtrahend.<br>14 - 5 = 9<br>4 1<br>14 – 4 = 10 |

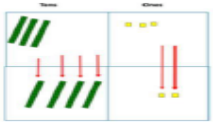
# Subtraction at Milverton

## Year 2

| | | |
|---|---|---|
| | | 10 – 1 = 9<br><br>How many do we take off to reach the next 10?<br>How many do we have left to take off? |
| **Finding the difference** | | |
| Using cubes, Numicon or Cuisenaire rods or other objects<br>  <br><br>  <br><br>Use basic bar models with items to find the difference. | Children draw cubes, Numicon or other concrete objects which they have used to illustrate what they need to calculate.<br>  <br>  <br> | Find the difference between 8 and 5.<br><br>8 – 5, the difference is<br><br>Children to explore why<br>9 - 6 =<br>8 – 5 =<br>7 – 4 =<br>All have the same difference. |
| **2 digit subtraction** | | |
|  <br><br>23 – 20 =<br><br>Part Part Whole<br>  <br><br>10 – 6<br>Link to addition use the part part whole model to explain the inverse. |  <br>Children draw the manipulatives they have used to solve this Calculation.<br><br><u>Use known number facts and place value to subtract on number lines</u> (partition second number only)<br>37 – 12 = 37 – 10 – 2<br>= 27 – 2<br>= 25<br>  <br><br><u>Bridge through 10 where necessary</u><br>32 – 17 =<br>32 – 10 – 2 - 5<br>  <br> | Continue using a range of equations as in Year 1 but with an appropriate progression in numbers, using numbers up to 100.<br><br>14 + 5 = 20 - ■<br>■ -30 = 70<br>100 – 29 = ■ |

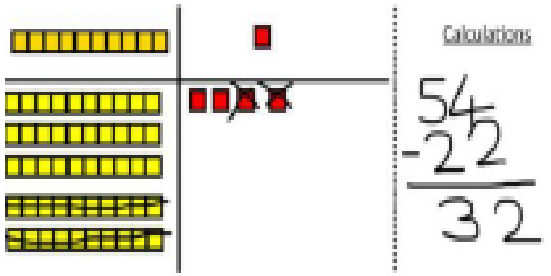
# Subtraction at Milverton

<u>Towards written methods (year 3)</u>
Recording addition and subtraction in expanded column can support understanding quantity aspect of place and prepare for efficient written methods with numbers. The numbers are first represented with base 10.
Use Base 10 to make the bigger number then take the smaller number away.



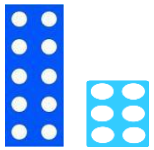
.
Show how you partition numbers to subtract. Again make the larger number first.

Draw the Base 10 or place value counters alongside the written calculation to help show the working out.

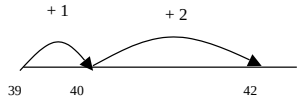



## Finding the difference

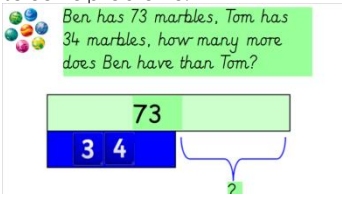
Continue to use cubes, Numicon or Cuisenaire rods or other objects building on year 1.
What's the difference between 20 and 16?



<u>Find a small difference by counting up (*complimentary addition*)</u>
42 – 39 = 3




Use comparison bar models and have children draws these to solve problems.




Hannah has 23 sandwiches.
Helen has 15 sandwiches.
Find the difference between the number of sandwiches.

# Subtraction at Milverton

## Year 3

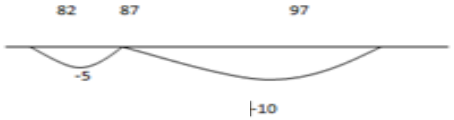
### Methods to support mental subtraction

Number lines
Children should make choices about whether to use complementary addition or counting back, depending on the numbers involved.

<u>Find a small difference by counting up</u>
Continue as in Year 2 but with appropriate numbers e.g.
102 – 97 = 5

<u>Subtract mentally a 'near multiple of 10' to or from a two-digit number</u>
Continue as in Year 2 but with appropriate numbers e.g.
78 – 49 is the same as 78 – 50 + 1

<u>Use known number facts and place value to subtract</u>
Continue as in Year 2 but with appropriate numbers
e.g. **97 – 15 = 72**

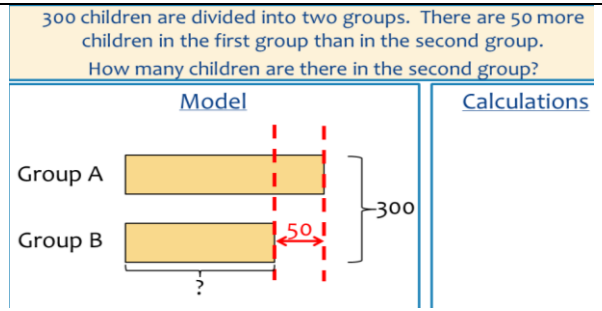



With practice, children will need to record less information and decide whether to count back or forward. It is useful to ask children whether counting up or back is the more efficient for calculations
such as 57 – 12, 86 – 77 or 43 – 28.
Use bar models to support concept of missing numbers and finding the difference.


Continue using a range of equations as in Year 1 and 2 but with an appropriate progression of numbers. **e.g.**

□ = 43 – 27
145 – □ = 138
274 – 30 = □
245 – □ = 195

# Subtraction at Milverton

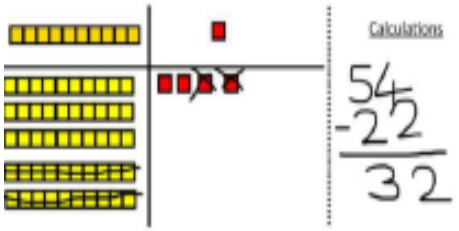


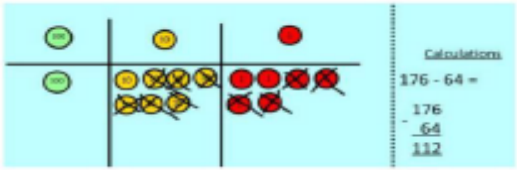

## Column method without re-grouping (up to 3 digits)

Show how you partition numbers to subtract. Make the larger number first in counters or Base 10.

36 – 14 = 22


Draw the Base 10 or place value counters alongside the written calculation to help to show working.




H T O
100 + 70 +6
- 0+ 60 + 4

100 + 10 + 2 = 112

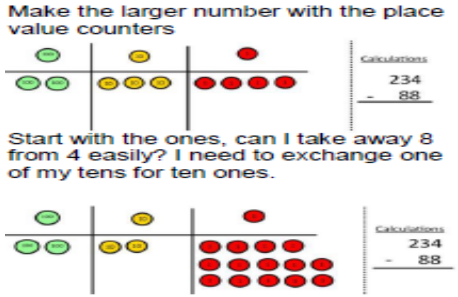
H T O
**1 7 6**
- 6 4
1 1 2

These two methods can be taught side by side. The formal method should be seen as a more streamlined version of the expanded method and not a new method.

# Subtraction at Milverton

## Column method re-grouping (up to 3 digits)

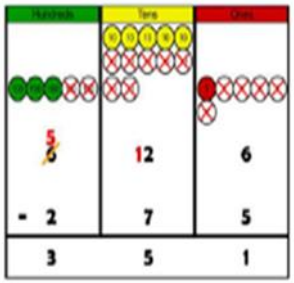
Use Base 10 to start with before moving on to place value counters. Start with one exchange before moving onto subtractions with 2 exchanges.




Now I can subtract my ones.


Show children how the concrete method links to the written method alongside your working. Cross out the numbers when exchanging and show where we write our new amount.

Draw the counters onto a place value grid and show what you have taken away by crossing the counters out as well as clearly showing the exchanges you make.




When confident , children can find their own way to record the exchange/ regrouping. Just writing the numbers as shown here shows that the child understands the method and knows when to exchange/regroup.


Children can start their formal written method by partitioning the number into clear place value columns.


Moving forward the children use a more compact method.


## Year 4

## Column method including re-grouping (up to 4 digits)

Expanded column subtraction with decomposition, modelled with place value counters, progressing to calculations with 4-digit numbers and decimals.

To do this place the correct amount of place value counters of the biggest value in the top box, slide down the amount of place value counters which are being subtracted, the answer will remain in the top box.

456 + ☐ = 710

1☐7 + 6☐ = 200

60 + 99 + ☐ = 340

200 – 90 – 80 = ☐

225 - ☐ = 150

☐ – 25 = 67

3450 – 1000 = ☐

☐ - 2000 = 900

# Subtraction at Milverton

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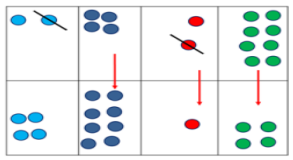
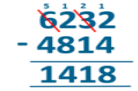
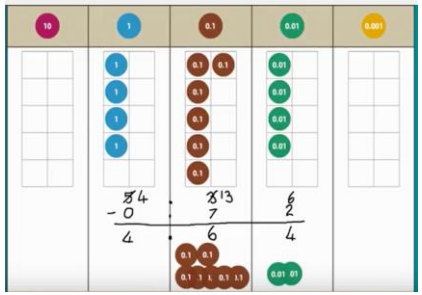
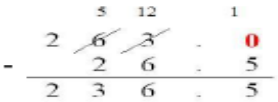
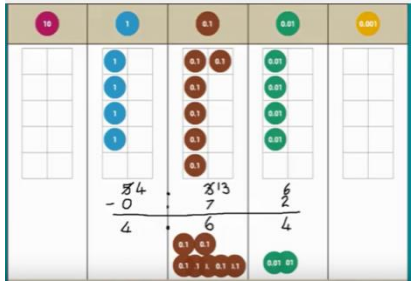
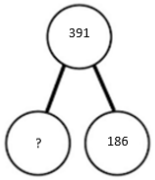
|---|---|---|---|
| | |   | |
| **Year 5** | **Column method re-grouping (inc decimals)** | | |
| | When understanding of the expanded method is secure, children will move on to the formal method of decomposition, which could be initially modelled by the teacher with place value counters to ensure visual understanding. |  | 6.45 = 6 + 0.4 + ☐<br>119 - ☐ = 86;<br>1 000 000 - ☐ = 999 000;<br>600 000 + ☐ + 1000 = 671 000;<br>12 462 – 2 300 = ☐<br>2000-698 = 1298 + ☐<br>This will lead to an understanding of subtracting any number including decimals.<br>  |
| **Year 6** | **Column method re-grouping (inc decimals)** | | |
| | As year 5, progressing to larger numbers, aiming for both conceptual understanding and procedural fluency with decomposition to be secured.<br><br>Continue calculating with decimals, including those with different numbers of decimal places and numbers to 10,000,000 |  | ☐ and △ each stand for a different number if △ = 34.<br>△ + △ = ☐ + ☐ + △. What is the value of ☐ ?<br>What if △ = 28? What if △ = 21<br><br>10 000 000 = 9 000 100 + ☐<br>7 – 2 x 3 = ☐<br>(7 – 2) x 3 = ☐<br>( ☐ - 2) x 3 = 15<br>( a - 2) x 3 = 15 What number does a represent?<br>An example of subtraction calculations |

# Subtraction at Milverton

| | | | |
|---|---|---|---|
| | | | 4 0 0 0 5<br>- 3 7 2 4<br>3 6 2 8 1 |

## Conceptual variation; different ways to ask children to solve 391 - 186




| 391 | |
|---|---|
| 186 | ? |

Raj spent £391, Timmy spent £186.
How much more did Raj spend?
Calculate the difference between 391 and 186.

□ = 391 – 186

391
-186
—

What is 186 less than 391?

Missing digit calculations


Suggested Vocabulary

Addition & Subtraction

Years 1 and 2 add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary. equal to, take, take away, less, minus, subtract, leaves, difference between, how many more, how many fewer / less than, most, least, count back , how many left, how much less is_? difference, count on, strategy, partition, tens, units

Years 3 and 4: add, addition, more, plus, increase, sum, total, altogether, double, near double, how many more to make…? how many more to make…? how many more is… than…? how much more is…? -, subtract, subtraction, take (away), minus, decrease, leave, how many are left/left over? how many fewer is… than…? how much less is…? difference between, half, halve, how many more/fewer is… than…? how much more/less is…? Is equal to, is the same as, tens boundary, hundreds boundary, inverse

Years 5 and 6: add, addition, more, plus, increase, sum, total, altogether, double, near double, how many more to make…? subtract, subtraction, take (away), minus, decrease, leave, how many are left/left over? difference between, half, halve, how many more/fewer is… than…? how much more/less is…? Is equal to, sign, is the same as, tens boundary, hundreds boundary, units boundary, tenths boundary, inverse