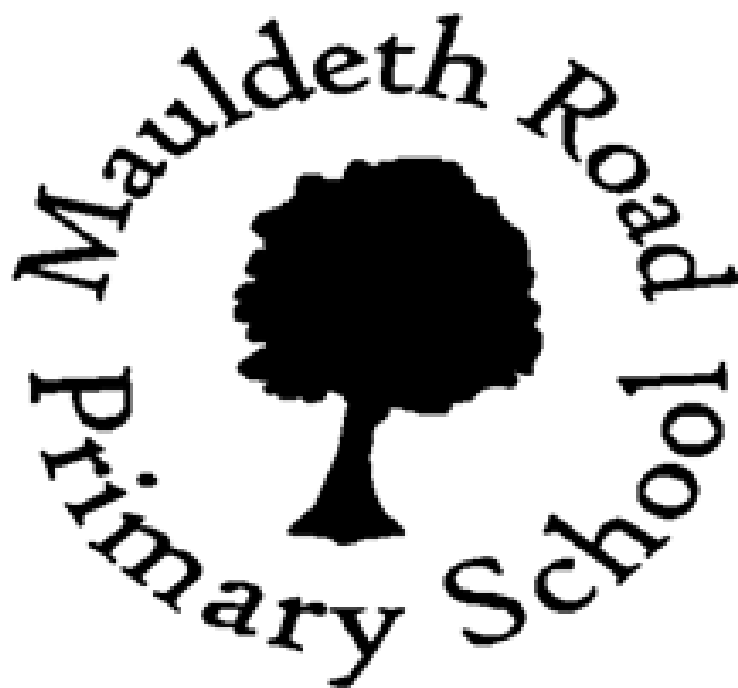


Written methods
for
subtraction



Written methods for subtraction

The aim is that children use mental methods when appropriate, but for calculations that they cannot do in their heads they use an efficient written method accurately and with confidence.

It is important that children practise and become confident in each method of calculation before moving on.

Counting groups of objects

Subtracting practically:

As with addition it is important to carry out lots of practical work first.

- Count out household objects such as buttons.
- Say 'If I take away 2 buttons, how many do we have now?' Ask your child to move two buttons.
- Recount the buttons encouraging your child to point to each object as they are counting.
- The next step is for your child to produce their own drawings to help with the calculation. Using the example, $8 - 3$, ask them to draw 8 cats (or anything else) and then cross 3 out. Ask your child to count how many are left - again pointing at them as they count.
- Begin to write this as a number sentence e.g. $8 - 3 = 5$.

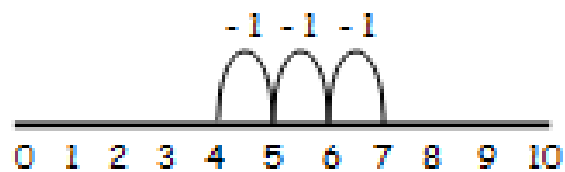


$$8 - 3 = 5$$

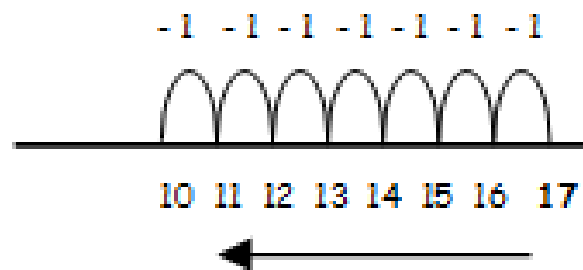
Using the number line

- Start with a printed number line. Use a number line for $7 - 3$.
- Next, use a empty number line, begin by putting the number you are subtracting from at the right hand end of the number line, **then count back in ones** (using the same method of jumping as for addition) the amount you need to subtract. e.g. $17 - 7$, write 17 on the right hand side and count back in ones 7 times until you reach 10. This is then the answer to the calculation.
- Once your child is confident with this method they can then move onto counting back in steps of 5 or 10 etc (see the example).
- For this method it is important that children know their number bonds to 10.

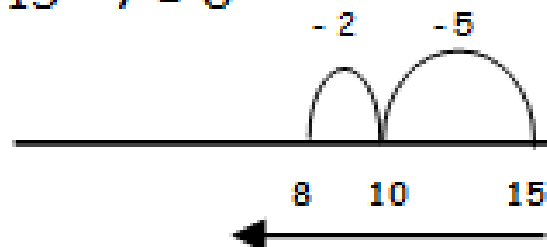
$$7 - 3 = 4$$



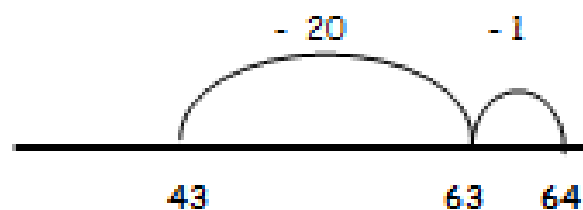
$$17 - 7 = 10$$



$$15 - 7 = 8$$



$$64 - 21 = 43$$



The counting-up method

- When working out subtraction mentally we often count up from the smaller number to the larger number. This method can be recorded using the empty number line. This method is most effective when the numbers are close together e.g. $57 - 49$ where it is easier to count up from 49 to 57 rather than counting back 49 from 57.
- This time put the number you are subtracting on the **left hand side and count up** until you reach the number you are subtracting from e.g. in $57 - 49$, write 49 on the left and then count up to 57.
- To find the answer count the total from your jumps which gives 8.
- This again can be completed using a variety of methods such as counting in steps of 5 or 10.
- **For the more difficult example, using this method children need to know number bonds to 100.**

$$57 - 49 = 8$$

+1 +1 +1 +1 +1 +1 +1 +1



49 50 51 52 53 54 55 56 57



$$83 - 67 = 16$$

+3 +10 +3



67 70 80 83



$$326 - 278 = 48$$



278 300 326

Partitioning

Subtraction can be recorded using partitioning.

- For example in $74 - 27$ the 27 would be partitioned into 20 and 7 and the 74 would stay as a complete number.
- Subtract 20 from 74 and then subtract the 7 from your answer.

$$74 - 27 =$$

$$74 - 20 = 54$$

$$54 - 7 = 47$$

so $74 - 27 = 47$

$$123 - 64 =$$

$$123 - 60 = 63$$

$$63 - 4 = 59$$

so $123 - 64 = 59$

Expanded Layout

- Partitioning the numbers into tens and units and writing one under the other begins to prepare children for the standard column method, where units are placed under units and tens are under tens.
- Partition both numbers this time into tens and units and write them underneath each other (by this stage your child should be confident with the value of each digit). Some subtractions should be straight forward where there is no exchange required (see example). Ensure your child uses the language of 70 subtract 50 rather than 7 subtract 5.

$$73 - 51 =$$

No exchange

$$73 \rightarrow 70 + 3$$

$$\begin{array}{r} - 51 \rightarrow 50 + 1 \\ \hline \end{array}$$

$$20 + 2$$

- Where exchange is required, partition the numbers as before. Talk to your child about having four apples in your hand and trying to give somebody 7 apples and the fact that it is not possible, so we need to exchange some tens for ones.
- Explain that 74 is the exactly the same amount as 60 and 14.
- Complete the subtraction always beginning with the units.

When your child is confident move onto the column method.

$$74 - 27 =$$

$$\begin{array}{r}
 74 \rightarrow 70 + 4 \rightarrow 60 + 14 \\
 - 27 \quad - 20 + 7 \quad - 20 + 7 \\
 \hline
 + 7 \\
 40 + 7
 \end{array}$$

Column Method

- Your child should be confident with the expanded method before going onto the column method.
- $74 - 27$
- E.g. Seventy four take away twenty seven. Four units take away seven units you cannot do. Change a ten into units that leaves six tens and fourteen units. Fourteen units take away seven units equals seven units. Six tens take away two tens equals four tens.
- This method can be extended to three digit figures. Example $341 - 123$, 1 unit take away 3 units you cannot do, so you need to change a ten into ten units. That leaves 3 tens and 11 units. 11 units take away 3 units is 8. 3 tens take away 2 tens is 1 ten. 3 hundred take away 1 hundred is 2 hundred. So the answer is 218.

$$\begin{array}{r}
 6 \cancel{7} 14 \\
 - 27 \\
 \hline
 47
 \end{array}$$

$$\begin{array}{r}
 3 \cancel{4} 1 \\
 - 123 \\
 \hline
 218
 \end{array}$$

- Examples include having to change a ten into units and then a hundred into tens, e.g. 743-498.
- ⇒ 3 units take away 8 units you cannot do. So you have to change a ten into 10 units. That leaves 3 tens and 13 units.
- ⇒ 13 units take away 8 units is 5 units.
- ⇒ 3 tens take away 9 tens you cannot do. So you have to change a hundred into 10 tens. That leaves 6 hundreds and 13 tens.
- ⇒ 13 tens take away 9 tens is 4 tens.
- ⇒ 6 hundreds take away 4 hundreds is 2 hundreds. So the answer is 245.
- This method can be used for subtracting decimals and money. Make sure the decimal point is lined up correctly.
- The next example is where there are no tens in the question, e.g. 605-268
- ⇒ 5 units take away 8 units you cannot do. So you have to change a ten into units- but there are no tens in the tens column- so first you have to change a hundred into 10 tens. That leaves 5 hundreds. Then you change one of the tens into units. That leaves 9 tens and 15 units.
- ⇒ 15 units take away 8 units is 7.
- ⇒ 9 tens take away 6 tens is 3 tens.
- ⇒ 5 hundreds take away 2 hundreds is 3 hundreds.
- ⇒ So the answer is 337
- Encourage your child to check by counting on.

$$\begin{array}{r}
 ^1 6 3 1 \\
 \cancel{7} \cancel{4} 3 \\
 - 498 \\
 \hline
 245 \\
 \hline
 \end{array}$$

$$\begin{array}{r}
 ^5 ^9 \cancel{6} ^1 1 5 \\
 \cancel{6} \cancel{0} 5 \\
 - 268 \\
 \hline
 337 \\
 \hline
 \end{array}$$