

T1687 Sample pages

Section 3: Multi-sensory subtraction

Day 1.

For this activity you will use Table 5 – see page 47.

1. Take ten red counters and set them on the table. The child does not have to count them, or recognise that there are ten on the table.
2. Select five red counters and move them away from the original group. Ask the child how many counters you have selected.
3. The way in which the child answers is important, and the technique explained here is used throughout these multi-sensory subtraction activities. The child touches the counters, counting them out if necessary, and then says the answer “five” and writes the number 5 in the first column in Table 5. If the child has difficulty with this – for example if the child cannot remember what “5” looks like - take a piece of paper and ask the child to do the exercise again. If it helps, let the child copy a “5” that you have written down. Repeat this with other numbers until the child can see any number of counters up to 9, say the number, and write down the figure.
4. Now remove three red counters from the group of five. Put them a little to the right of the remaining group of two counters. Ask the child “how many counters did I take away?” The child touches the three that have been removed, says “three” and writes in the number 3 in the middle column, next to the 5 in the left hand column.
5. You now push the three counters away, leaving just two counters in the centre of the table, and ask how many counters there are left. The child counts them, and says “two” and writes in the number 2 in the final column. (If the child can immediately say “two” and does not need to count, then you might be undertaking work that is too easy for the child. There is no benefit in going over work that the child already knows – she or he will soon get bored, and nothing will have been achieved. Try two more questions – if again the answer is given at once, move on to Day 2.)
6. Continuing to work only with red counters, work on other sums which start with up to 10 red counters and take some away.

Day 2.

For this activity you will use Table 6 – see page 48.

1. Revise point 6 from yesterday by undertaking two questions. If the child makes a mistake, continue to work on this activity until the child gets them all right. If this continues for over 5 minutes stop the activity and come back to it tomorrow. Don't proceed until the child can do this work correctly.
2. When you know that the child is perfectly happy with this operation move on to using Table 6. The activity with the second table is just the same as yesterday's work, except that you and the child must now also use the words “take away” and “equals”. Please make sure you stick with these words and that you don't use any

variants, such as “minus”. “Minus” is a perfectly adequate word, but many children get confused between the various ways of saying “take away” (“minus”, “less”, “remove”, “subtract”) and so it is better to stick to one word. (If your child is at a school that always uses “minus” then obviously you can change to “minus” throughout and not use “take away”.)

The activity in Table 6 also requires that the child writes in “–” and “=” in the columns shown. Thus the child will be writing down:

$$4 - 3 = 1$$

in the relevant columns. Each time the child writes “–” the child must say “take away” and each time the child writes “=” the child says “equals”. (Again do not combine the use of “equals” with the use of “makes” or “is”. Always stick to the same word.)

3. Choose some more sums. Which sums you choose do not matter at this stage providing the numbers you start with are all under 10.
4. Now extend the exercise by adding the concept of nought. Put out five red counters and then remove five. The child must say and write:

$$5 - 5 = 0$$

You must decide what you are going to call “0” – and again you should stick to one word. Most children call it “nought” but you can also use “zero” if the child is happier with that. “Nothing” is not normally considered to be a mathematical word, and should be avoided unless the child makes a particular fuss about wanting that word.

Day 3.

For this activity you will use Table 7 – see page 49.

1. Once the child is happy with the subtractions using numbers under 10, and with the concept of 0, it is time to increase the range of numbers up to 19. Set out the work as yesterday, and use Table 7 for recording the answers.
2. If the child starts to get confused over the counting of the red counters then you can help the child by using the following technique. If you have set the problem $15 - 8 = \underline{\quad}$, and the child is simply miscounting on the way to 15, ask the child to count the red counters until he or she gets to 10. Then at this point, pile the 10 counters up and set them to one side. Now go on and count the remaining 5, counting them as eleven, twelve, thirteen, fourteen and fifteen. The child can then write down 15.
3. If you believe there might be confusion here return to the first section of this course on numbers and revise the numbers up to 20.
4. Once you have a technique working satisfactorily, stick to that technique, and keep working on pairs of numbers that are between 1 and 19 until the child gets the answer right each time without any hesitation.

Day 4.

1. Revise the final point of yesterday's work.
2. Now the child is ready to undertake subtractions with numbers from 1 to 99, where the answer is positive. To begin, take the usual pile of red counters, this time doing the calculation $14 - 9 = \underline{\quad}$. Don't tell the child that you have set out 14 counters, but rather tell the child that he or she has to work out the total.
3. The first thing the child has to do is to count the total, and in order to remember the numbers, say the total and write it down as numerals. Also the child should separate out the ten, and put that pile on a place setting marked:

Ten
10

4. Now it should be clear to the child that there are fourteen (a pile of ten, and a pile of four) counters and taking away 9 is easy. You can then count the result.
5. Next tell the child we are going to start with 25 counters. But we can see at once that this is getting a bit difficult to manage. And we are running out of red counters. If the child has completed the earlier sections of this book the child should immediately suggest we use blue counters (or whatever other symbol has been agreed) for ten. If you have moved straight to this part of the book you will need to ask the child to come up with a simpler way to represent 25. See **Day 4** in the section on **Addition** for more thoughts on this process.
6. Assuming for the sake of simplicity, that we settle on blue counters meaning 10, the child is now faced with 25 being represented by two blue counters and five red counters.
7. Show the child the blue and red counters and ask what number that means. If the child slips on this, remind the child of the meaning of the blue counter. When the child says 25 the child should also write down 25 in Table 7.
8. Tell the child you want to take away 13 – the child should be able to do this by taking away one blue and three red counters. If not, help the child with suggestions. The child should complete writing the sum in Table 7.

Day 5.

1. Repeat points 6 to 8 from yesterday.
2. If the child is still stumbling over the problem, go back to red counters only, then reintroduce the blue, and try again. Remember the rule here must be that you can only take red from red, and blue from blue.
3. Now try several more subtractions of this type, such as $29 - 18$, $22 - 21$, $18 - 15$, and so on. In each case make sure the questions allow the removal of reds from reds and blues from blues. So at this point we do not ask $12 - 6$ as that would lead to a problem. Each time ask the child to write the completed subtraction in Table 7.