



SUBTRACTION

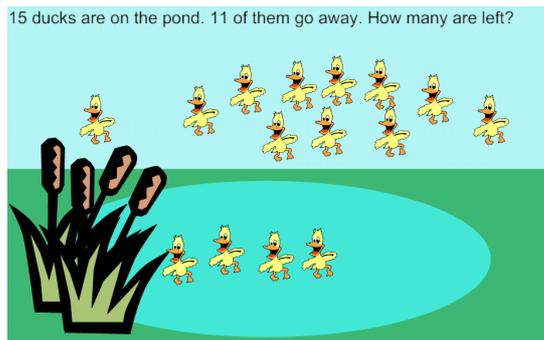
Children begin Primary School by interpreting subtraction as 'taking away'.

They represent 'taking away' using objects and with number sentences,

recognising that the number of objects remaining is the answer in a

calculation such as $15 - 11 = 5$.

15 ducks are on the pond. 11 of them go away. How many are left?



11	12	13	14	15
1	2	3	4	5

Arrows indicate a downward arrow from 15 to 5 and a leftward arrow from 5 to 4.

The hundred square is used to reinforce visual patterns when taking away 10 and beyond.



Number lines are used to support calculations in class, such as $10 - 7$ and create an accompanying mental picture.

Pictures, songs, visual and concrete materials continue to be used to reinforce learning.

Susie has £15 pocket money and spends £11 of it. How much money does she have left?

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30

'Jump back in 10s then jump back in 1s'.

Children will also look at families of related facts, for instance...

$$12 + 9 = 21$$

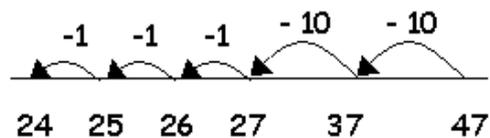
$$9 + 12 = 21$$

$$21 - 12 = 9$$

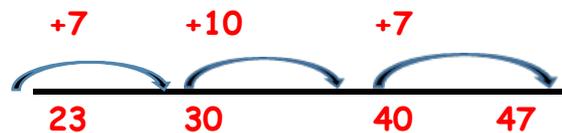
$$21 - 9 = 12$$

Number lines continue to be used to support calculations and create an accompanying mental picture.

e.g. $47 - 23 = 24$



Or start at the smallest number and count on to the biggest.



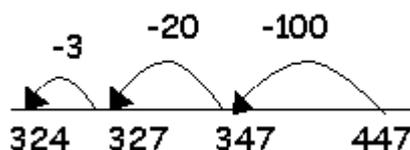
The calculation can also be **partitioned** by subtracting the nearest multiple of 10 and adjusting.

$$47 - 20 = 27$$

$$27 - 3 = 24$$

Calculations become more complex, as the numbers get bigger.

e.g. $447 - 123 = 324$



$$447 - 100 = 347$$

$$347 - 20 = 327$$

$$327 - 3 = 324$$

The children will always be encouraged to check with the inverse/opposite operation

i.e. $324 + 123 = 447$.

Children draw on their knowledge of number facts and place value to refine their use of expanded methods and progress to a **column** method.

At first, they will subtract numbers in a column, where there is no need to exchange, for example;

$$\begin{array}{r} 538 \\ - 214 \\ \hline 324 \end{array}$$

Starting at the units column on the right hand side, the lower number is subtracted from the number above it.

8 units subtract 4 units is 4 units. Place 4 in the units column beneath.

3 tens subtract 1 ten is 2 tens. Place 2 in the tens column beneath.

5 hundreds subtract 2 hundreds is 3 hundreds. Place 3 in the hundreds column beneath.

The answer is 324.

Children will continue to look at families of related facts and these will become more complex, eventually including decimals e.g.

$$250 + 150 = 400$$

$$150 + 250 = 400$$

$$400 - 250 = 150$$

$$400 - 150 = 250$$

$$2.5 + 1.5 = 4.0$$

$$1.5 + 2.5 = 4.0$$

$$4.0 - 1.5 = 2.5$$

$$4.0 - 2.5 = 1.5$$

Children will also be encouraged to develop mental agility by **counting on** from the lowest number to the highest e.g.

$$150 + ? = 400$$

Possible strategies may include;

$$150 + \mathbf{50} = 200$$

$$\mathbf{200} + 200 = 400$$

$$\mathbf{200} + \mathbf{50} = \mathbf{250}$$

$$150 + \mathbf{150} = 300$$

$$300 + \mathbf{100} = 400$$

$$\mathbf{150} + \mathbf{100} = \mathbf{250}$$

The children are always encouraged to explain their thinking and share their strategies with others.

A more efficient written method will continue to be developed.

Often, it's not as straightforward as this and there will be a need to exchange hundreds for tens, and tens for units and so on, for example;

The children learn that the number with the highest value must be on the top line and the digits must be lined up in the correct place.

$$352 - 168 = 184$$

	H		T		U
	² 3	¹⁴	5	¹	2
-	1		6		8
	1		8		4

Step 1

Begin at the units column. Now say, what's 2 units take away 8 units? I cannot. (2 is less than 8, therefore I cannot subtract).

Step 2

Because you do not have enough units, go to the tens column. You have 5 tens here. You must EXCHANGE one of the five tens for ten units. Do this by scoring out the 5 and writing a small 4. Put the figure 1 (representing one ten - 10 units) in front of the 2 units. 12 take away 8 is 4. Put a figure 4 in the units column.

Step 3

Go to the tens column. 4 tens take away 6 tens. I cannot do this. Go to the hundreds column. You have 3 hundreds here. EXCHANGE 1 hundred for 10 tens. Do this by scoring out the 3 and writing a small 2. Put the figure 1 in front of the 4 tens. 14 take away 6 is 8. Write the figure 8 in the tens column.

Step 4

Go to the hundreds column. 2 hundreds take away 1 hundreds equals 1 hundreds. Write a 1 in the hundreds column. **The answer is 184.**

Numbers that include a zero can be a bit trickier. For example,

$$502 - 168 = 334$$

	H	T	U
4	5	0	2
1	6	8	
-	1	6	8
	3	3	4

Step 1

Begin at the units column. Now say 2 units take away 8 units. I cannot. (2 is less than 8, therefore I cannot subtract).

Step 2

Because you do not have enough units, go to the tens column. There are no tens, so you cannot exchange. You must go to the hundreds column. You have 5 hundreds here. You must EXCHANGE one of the five hundreds for 10 tens. Do this by scoring out the 5 and writing a small 4. Put the figure 1 (representing 10 tens) in front of the 0 tens.

Step 3

You now have 10 tens in the tens column, so you can exchange one of these tens for 10 units. Do this by scoring out the 10 and writing the figure 9 in the tens column. Put the figure 1 (representing one ten - 10 units) in front of the 2 units. 12 take away 8 is 4. Put a figure 4 in the units column.

Step 4

Go to the tens column. 9 take away 6 is 3. Write 3 in the tens column.

Step 5

Go to the hundreds column. 4 hundreds take away 1 hundred is 3 hundreds. Put the figure 3 in the hundreds column. **The answer is 334.**

The children will naturally extend their column methods to include numbers up to at least 6 digits and will apply the strategy of 'dropping down the decimal point' (as explained in the addition section) when dealing with decimal calculations or money.