

Subtraction with borrowing

3rd and 4th std

17/9/2020

To subtract numbers
with More than one digit

SUBTRACTION

More on TOP?

No need to STOP,

$$\begin{array}{r} 94 \\ -53 \\ \hline 41 \end{array}$$

More on the FLOOR?

Go next DOOR

and take 10 MORE,

$$\begin{array}{r} 7\cancel{8}2^{12} \\ -6\cancel{5} \\ \hline 17 \end{array}$$

Are they the SAME?

Zero is your GAME,

$$\begin{array}{r} 30 \\ -10 \\ \hline 20 \end{array}$$

How to Borrow When Subtracting

Sometimes, when you are subtracting large numbers, the top digit in a column is smaller than the bottom digit in that column. In that case, you need to borrow from the next column to the left. Borrowing is a two-step process:

1

Subtract 1 from the top number in the column directly to the left.

Cross out the number you're borrowing from, subtract 1, and write the answer above the number you crossed out.

2

Add 10 to the top number in the column you were working in.

For example, suppose you want to subtract $386 - 94$. The first step is to subtract 4 from 6 in the ones column, which gives you 2:

$$\begin{array}{r} 386 \\ - 94 \\ \hline 2 \end{array}$$

When you move to the tens column, however, you find that you need to subtract $8 - 9$. Because 8 is smaller than 9, you need to borrow from the hundreds column. First, cross out the 3 and replace it with a 2, because $3 - 1 = 2$:

$$\begin{array}{r} 2 \\ \cancel{3}86 \\ - 94 \\ \hline 2 \end{array}$$

Next, place a 1 in front of the 8, changing it to an 18, because $8 + 10 = 18$:

$$\begin{array}{r} 2 \\ \cancel{3} \mathbf{18} 6 \\ - 94 \\ \hline 2 \end{array}$$

Now you can subtract in the tens column: $18 - 9 = 9$:

$$\begin{array}{r} 2186 \\ - 94 \\ \hline 92 \end{array}$$

The final step is simple: $2 - 0 = 2$:

$$\begin{array}{r} 2186 \\ - 94 \\ \hline 292 \end{array}$$

Therefore, $386 - 94 = 292$.

In some cases, the column directly to the left may not have anything to lend. Suppose, for instance, you want to subtract $1,002 - 398$.

Beginning in the ones column, you find that you need to subtract $2 - 8$. Because 2 is smaller than 8, you need to borrow from the next column to the left. But the digit in the tens column is a 0, so you can't borrow from there because the cupboard is bare, so to speak:

$$\begin{array}{r} 1,002 \\ - 398 \\ \hline \end{array}$$

When borrowing from the next column isn't an option, you need to borrow from the nearest non-zero column to the left.

In this example, the column you need to borrow from is the thousands column. First, cross out the 1 and replace it with a 0. Then place a 1 in front of the 0 in the hundreds column:

$$\begin{array}{r} 0 \\ \cancel{1} 10 0 2 \\ - 398 \\ \hline \end{array}$$

Now, cross out the 10 and replace it with a 9. Place a 1 in front of the 0 in the tens column:

$$\begin{array}{r}
 0 \quad 9 \\
 4 \quad \mathbf{40} \quad \mathbf{10} \quad 2 \\
 \underline{\quad - 3 \quad 9 \quad 8}
 \end{array}$$

Finally, cross out the 10 in the tens column and replace it with a 9. Then place a 1 in front of the 2:

$$\begin{array}{r}
 0 \quad 9 \quad \mathbf{9} \\
 4 \quad \mathbf{40} \quad \mathbf{10} \quad \mathbf{12} \\
 \underline{\quad - 3 \quad 9 \quad 8}
 \end{array}$$

At last, you can begin subtracting in the ones column: $12 - 8 = 4$:

$$\begin{array}{r}
 0 \quad 9 \quad \mathbf{9} \\
 4 \quad \mathbf{40} \quad \mathbf{10} \quad \mathbf{12} \\
 \underline{\quad - 3 \quad 9 \quad 8} \\
 \quad \quad \quad \mathbf{4}
 \end{array}$$

Then subtract in the tens column: $9 - 9 = 0$:

$$\begin{array}{r}
 0 \quad 9 \quad \mathbf{9} \\
 4 \quad \mathbf{40} \quad \mathbf{10} \quad \mathbf{12} \\
 \underline{\quad - 3 \quad 9 \quad 8} \\
 \quad \quad \mathbf{0} \quad \mathbf{4}
 \end{array}$$

Then subtract in the hundreds column: $9 - 3$
 $= 6$:

$$\begin{array}{r} 0 \quad 9 \quad 9 \\ 1 \quad \cancel{10} \quad \cancel{10} \quad 12 \\ - \quad 3 \quad 9 \quad 8 \\ \hline \quad 6 \quad 0 \quad 4 \end{array}$$

Because nothing is left in the thousands column, you don't need to subtract anything else. Therefore, $1,002 - 398 = 604$.