

# Basic Subtraction

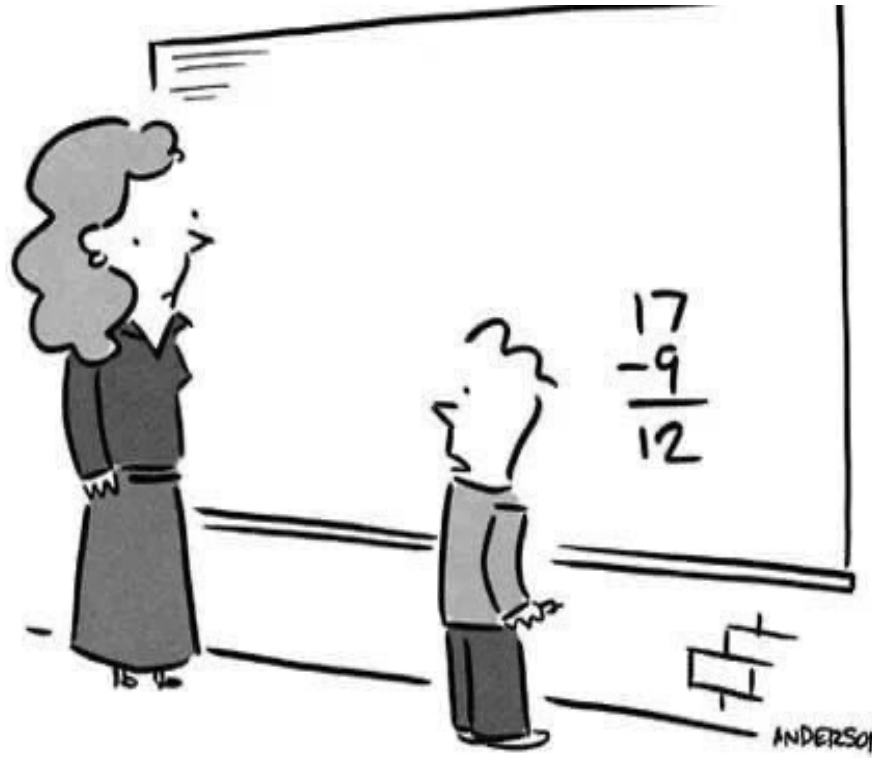
How good you are in mathematics ?

Me :



Scientist: students need 8-10 hours of sleep a day

School:



"I know it's wrong, I'm just waiting for the autocorrect."

Example 1

$$85 - 24$$

② do this next    ① start here

$$\begin{array}{r} 85 \\ - 24 \\ \hline 61 \end{array}$$

Example 2

$$85 - 37$$

This is different to the last example:

For each calculation we always need a bigger number on top. Here we do not have that for the pink calculation, so we need to borrow and steal. We always borrow 10 (add 10) for the first calculation and steal 1 (subtract 1) for the next calculation

②                      ①  
do this next   start here

$$\begin{array}{r}
 \begin{array}{cc}
 \text{7} \swarrow & \downarrow \\
 \text{8} & \text{5} \\
 \swarrow & \downarrow \\
 & \text{15}
 \end{array} \\
 - \quad \begin{array}{cc}
 \text{3} & \text{7}
 \end{array} \\
 \hline
 \begin{array}{cc}
 \text{4} & \text{8}
 \end{array} \\
 \hline
 \end{array}$$

Method:

borrow (add) a 10  
steal (subtract) a 1

Example 3

$$435 - 269$$

This is harder than the last example since we have to borrow and steal twice:

For **each calculation** we always need a bigger number on top. Here we do not have that for the **pink calculation** **AND** the **blue calculation**, so we need to borrow and steal.

**Method :**

borrow (add) a 10  
steal (subtract) a 1

This time we have to  
repeat the process:  
borrow (add) a 10  
steal (subtract) a 1

$$\begin{array}{r}
 3 \phantom{00} \phantom{00} \\
 4 \phantom{00} \phantom{00} \\
 2 \phantom{00} \phantom{00} \\
 \hline
 1 \phantom{00} \phantom{00} \\
 \hline
 \end{array}
 \begin{array}{r}
 12 \\
 \cancel{2} \\
 3 \\
 6 \\
 6 \\
 \hline
 \hline
 \end{array}
 \begin{array}{r}
 15 \\
 5 \\
 9 \\
 6 \\
 \hline
 \hline
 \end{array}$$

Example 4

$$202 - 54$$

This is harder than the last example since we are dealing with a **0** when we steal which is a little more confusing:

## Method 1

We proceed as usual, but here we need to take 1 away from 0.

When we take away 1 from 0 we are basically taking 1 away from 10 and therefore we turn the 0 into a 9. When we make a 0 and 9, we then ALSO AUTOMATICALLY make the next number 1 less.

$$\begin{array}{r}
 1 \quad 9 \quad 12 \\
 \cancel{2} \quad \cancel{0} \quad 2 \\
 - \quad 5 \quad 4 \\
 \hline
 1 \quad 4 \quad 8
 \end{array}$$

**Method :**

borrow (add) a 10

steal (subtract) a 1

steal (subtract) a 1 again  
(since we made a 0 a 9)

## Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 20 to get 19

$$\begin{array}{r}
 1 \quad 9 \quad 12 \\
 \cancel{2} \quad \cancel{0} \quad 2 \\
 - \quad 5 \quad 4 \\
 \hline
 1 \quad 4 \quad 8
 \end{array}$$

Example 5

$$3400 - 2246$$

## Method 1

We take away 1 from 0 we are basically taking 1 away from 10. We have to ALSO make the next number 1 less each time we change a 0 into a 9 and hence we and do it again

**Method :**

borrow (add) a 10

steal (subtract) a 1

steal (subtract) a 1 again  
(since we made a 0 a 9)

$$\begin{array}{r}
 \phantom{0}3 \phantom{0}4 \phantom{0}0 \phantom{0}0 \\
 \phantom{0}2 \phantom{0}2 \phantom{0}4 \phantom{0}6 \\
 \hline
 \phantom{0}1 \phantom{0}1 \phantom{0}5 \phantom{0}4
 \end{array}$$

Diagram illustrating Method 1 for the subtraction  $3400 - 2246$ . The numbers are arranged in columns. Above the top row, the values 3, 9, and 10 are written above the 4, 0, and 0 respectively, indicating the borrowing process. The top row shows 3, 4, 0, 0 with diagonal lines through the 4, 0, and 0. The second row shows 2, 2, 4, 6. A horizontal line is drawn below the second row. The bottom row shows the result 1, 1, 5, 4, which is underlined.

## Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 40

$$\begin{array}{r}
 \phantom{0}3 \phantom{0}4 \phantom{0}0 \phantom{0}0 \\
 \phantom{0}2 \phantom{0}2 \phantom{0}4 \phantom{0}6 \\
 \hline
 \phantom{0}1 \phantom{0}1 \phantom{0}5 \phantom{0}4
 \end{array}$$

Diagram illustrating Method 2 for the subtraction  $3400 - 2246$ . The numbers are arranged in columns. Above the top row, the values 3, 9, and 10 are written above the 4, 0, and 0 respectively, indicating the borrowing process. The top row shows 3, 4, 0, 0 with diagonal lines through the 4, 0, and 0. The second row shows 2, 2, 4, 6. A horizontal line is drawn below the second row. The bottom row shows the result 1, 1, 5, 4, which is underlined.

Example 6

3400 - 2746

This is harder than the last example since we borrow and steal twice:

Method 1

We take away 1 from 0 we are basically taking 1 away from 10. We have to ALSO make the next number 1 less each time we change a 0 into a 9 and hence we and do it again

Method :
borrow (add) a 10
steal (subtract) a 1
steal (subtract) a 1 again
We repeat the process:
borrow (add) a 10
steal (subtract) a 1 again

Vertical subtraction for Method 1 showing borrowing and stealing steps to reach the final result 0654.

Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 40

Vertical subtraction for Method 2 showing a combined steal step to reach the final result 0654.

Example 7

$$39000 - 26453$$

This is harder than the last example since we have successive 0's. Remember that with 0's we keep going:

### Method 1

We take away 1 from 0 we are basically taking 1 away from 10. We have to ALSO make the next number 1 less each time we change a 0 into a 9 and hence we and do it again

		8	9	9	10
-	3	<del>9</del>	<del>0</del>	<del>0</del>	<del>0</del>
	2	6	4	5	3
	1	2	5	4	7

### Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 900

		8	9	9	10
-	3	<del>9</del>	<del>0</del>	<del>0</del>	<del>0</del>
	2	6	4	5	3
	1	2	5	4	7

**Method :**

borrow (add) a 10

steal (subtract) a 1

steal (subtract) a 1 again

steal (subtract) a 1 again



Example 8

$$80800 - 56722$$

## Method 1

Note: This zero did not become a 9, since we were done after the 8 became a 7 and we start the process of borrowing and stealing again

## Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 80

**Method :**

borrow (add) a 10

steal (subtract) a 1

steal (subtract) a 1 again

We repeat the process:

borrow (add) a 10

steal (subtract) a 1

$$\begin{array}{r}
 \begin{array}{cccccc}
 & 7 & 10 & 7 & 9 & 10 \\
 & \cancel{8} & \cancel{0} & \cancel{8} & \cancel{0} & \cancel{0} \\
 - & 5 & 6 & 7 & 2 & 2 \\
 \hline
 & 2 & 4 & 0 & 7 & 8
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 \begin{array}{cccccc}
 & 7 & 10 & 7 & 9 & 10 \\
 & 8 & \cancel{0} & \cancel{8} & \cancel{0} & \cancel{0} \\
 - & 5 & 6 & 7 & 2 & 2 \\
 \hline
 & 2 & 4 & 0 & 7 & 8
 \end{array}
 \end{array}$$

$$70300 - 59722$$

Example 9

### Method 1

### Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 30

**Method :**

borrow (add) a 10  
steal (subtract) a 1  
steal (subtract) a 1 again

We repeat the process:  
borrow (add) a 10  
steal (subtract) a 1 again  
steal (subtract) a 1

	6	9	12	9	10
	<del>7</del>	<del>0</del>	<del>3</del>	<del>0</del>	<del>0</del>
-	5	9	7	2	2
<hr style="border: 1px solid black;"/>					
	1	0	5	7	8
<hr style="border: 1px solid black;"/>					

	6	9	12	9	10
	<del>7</del>	<del>0</del>	<del>2</del>	<del>9</del>	<del>0</del>
-	5	9	7	2	2
<hr style="border: 1px solid black;"/>					
	1	0	5	7	8
<hr style="border: 1px solid black;"/>					

Example 10

$$70005 - 54567$$

Method 1

$$\begin{array}{r}
 \begin{array}{cccccc}
 & 6 & 9 & 9 & 9 & 15 \\
 \cancel{7} & \cancel{0} & \cancel{0} & \cancel{0} & \cancel{5} & \\
 5 & 4 & 5 & 6 & 7 & \\
 \hline
 1 & 5 & 4 & 3 & 8 & 
 \end{array}
 \end{array}$$

Method 2

when stealing from a 0, combine it with the number to the left of it i.e. steal 1 from 7000

$$\begin{array}{r}
 \begin{array}{cccccc}
 & 6 & 9 & 9 & 9 & 15 \\
 \cancel{7} & 0 & 0 & 0 & \cancel{5} & \\
 5 & 4 & 5 & 6 & 7 & \\
 \hline
 1 & 5 & 4 & 3 & 8 & 
 \end{array}
 \end{array}$$

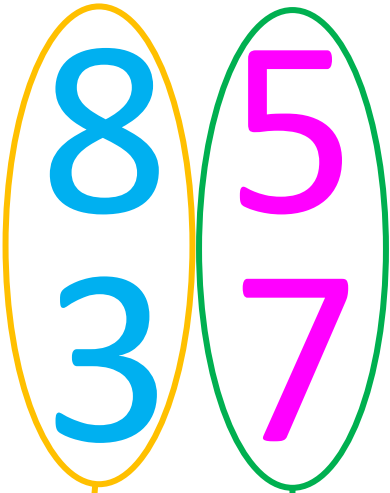
EASY subtraction  
method without  
having to borrow



This involves knowing negative numbers and place value!

$$85 - 37$$

Step 2:  
Do this vertical  
calculation



Step 1:  
Do this vertical  
calculation

$$\begin{array}{r} 85 \\ - 37 \\ \hline 50 - 2 \end{array}$$

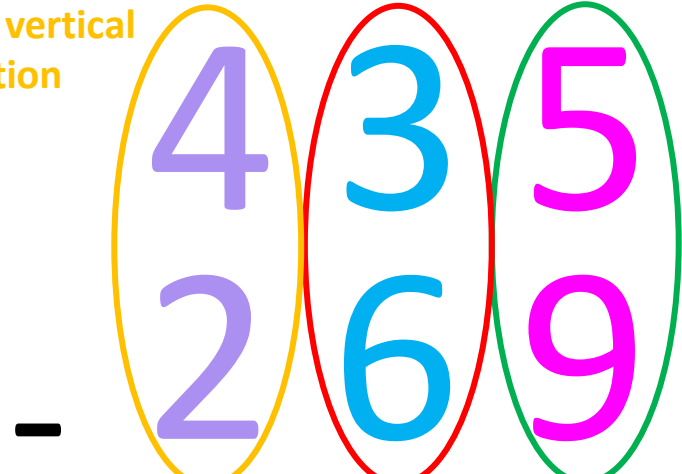
tens place so  
represents 50

ones place so  
represents 2

$$50 - 2 = 48$$

$$435 - 269$$

Step 3:  
Do this vertical  
calculation



Step 2:  
Do this vertical  
calculation

Step 1:  
Do this vertical  
calculation

$$\begin{array}{r} 435 \\ - 269 \\ \hline 200 - 30 - 4 \end{array}$$

hundreds place so  
represents 200

tens place so  
represents 30

ones place so  
represents 4

$$200 - 30 - 4 = 166$$

$$202 - 54$$

$$\begin{array}{r} 202 \\ - 54 \\ \hline \end{array}$$

$$\underline{2} - \underline{5} - \underline{2}$$

hundreds place so  
represents 200

tens place so  
represents 50

ones place so  
represents 2

$$200 - 50 - 2 = 148$$

$$3400 - 2246$$

$$\begin{array}{r} 3400 \\ - 2246 \\ \hline \end{array}$$

$$\underline{1} \underline{2} - \underline{4} - \underline{6}$$

thousands place so  
represents 1000

hundreds place so  
represents 200

tens place so  
represents 40

ones place so  
represents 6

$$1000 + 200 - 40 - 6 = 1154$$

We can also work  
horizontally

$$435 - 269$$

$$435 - 269$$

$$400 - 200 + 30 - 60 + 5 - 9$$

$$200 - 30 - 4$$

$$166$$



$$3400 - 2246$$

$$3400 - 2246$$

$$3000 - 2000 + 400 - 200 + 0 - 40 + 0 - 6$$

$$1000 + 200 - 40 - 6$$

$$1154$$

# Another Trick - Dealing With Zeros

$$5000 - 2384$$

Instead of borrowing as usual

	4	9	9	10						
	<del>5</del>	<del>0</del>	<del>0</del>	0	Subtract 1 from each number					
	2	3	8	4						
<hr/>										
					Subtract 1	→	4	9	9	9
					Subtract 1	→	2	3	8	3
							<hr/>	<hr/>	<hr/>	<hr/>
							2	6	1	6