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# Introduction

*Math Mammoth Add & Subtract 2-B* is a continuation to the book *Math Mammoth Add & Subtract 2-A*. The goal of this book is to study addition and subtraction within 0-100, both mentally and in columns, especially concentrating on regrouping in addition (carrying) and in subtraction (borrowing).

## Mental math

Mental math is important because it builds number sense. This book includes many lessons that practice mental math. For example, the child practices adding and subtracting two-digit numbers when one of the numbers is a whole ten (problems such as  $30 + 14$ , or  $66 - 20$ ).

Also studied are problems such as  $36 + 8$  or  $45 + 9$ . These problems use the idea of going over ten as in problems  $6 + 8$  and  $5 + 9$ . The child knows that  $6 + 8$  fills the first ten and is four more than the ten. He/she will learn to use that fact when adding  $36 + 8$ . The sum  $36 + 8$  fills the *next* whole ten (40), and is four more than that, or 44.

## Regrouping in tens

Simultaneously with this, the child learns adding two-digit numbers in columns, and regrouping with tens, or “carrying,” which is illustrated and explained in detail with the help of visual models. These visual models take the place of base-ten blocks or other manipulatives. You are welcome to use manipulatives to get the idea across, if you prefer. The main concept to understand is that 10 ones are regrouped to form a new ten, and this new ten is written using a little “1” in the tens column.

As a “stepping stone” into the standard way to add, you can show the child the method below. This can be used if the child does not readily understand why the little “1” above the tens column corresponds to a ten. Below, the ones are added first, and the answer is written using both columns. Then, the tens are added and the answer is written under the sum of ones. Lastly, both sums are added.

tens ones	tens ones	tens ones
3 6	3 6	3 6
+ 1 8	+ 1 8	+ 1 8
-----	-----	-----
1 4	1 4	1 4
-----	-----	-----
4 0	4 0	4 0
-----	-----	-----
5 4	5 4	5 4

add ones first →      add tens here →      total →

## Regrouping in subtraction

The next lessons teach subtracting in columns. First we only deal with the easy problems where you don't need to regroup (borrow). Then the following lessons practice in detail the process of regrouping or borrowing. You can use either term with your child, or even choose not to use either if you feel it is confusing. You can alternatively use the phrase “breaking a ten into ten ones.”

First, the lesson *Regrouping* practices breaking down a ten into ten ones because we cannot subtract from the ones. It is crucial that the child understands what happens here. Otherwise, he/she might end up only memorizing the procedure, and will probably at some point misremember how it was done. That is why this lesson deals with the regrouping process in detail with plenty of visual exercises.

If you notice that the child does not understand the concept of regrouping, he/she may need more practice with concrete manipulatives or visual exercises before proceeding.

## More mental math

After learning regrouping, we practice mental subtraction in two separate lessons. One of them expounds on several methods for mental subtracting. Another is about Euclid's game—a fun game that also practices subtraction of two-digit numbers.

*I wish you success in teaching math!*

*Maria Miller, the author*

## Helpful Resources on the Internet

*Use these free online resources to supplement the “bookwork” as you see fit.*

*You can access an up-to-date online version of this list at*

[www.mathmammoth.com/weblinks/add-subtract-2B.htm](http://www.mathmammoth.com/weblinks/add-subtract-2B.htm)

### Base Blocks Addition

A virtual manipulative that shows regrouping in addition. You can either solve addition problems that are provided, or create your own. “Lasso” with a mouse ten units, ten tens, or ten hundreds to regroup them. Choose “Columns = 2” to restrict the work to two-digit numbers.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_154\\_g\\_1\\_t\\_1.html?from=category\\_g\\_1\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_154_g_1_t_1.html?from=category_g_1_t_1.html)

### Base Blocks Subtraction

A virtual manipulative that helps teach borrowing in subtraction. Choose "Create Problem", then click on the red and blue blocks to create a problem. The number to be subtracted (the subtrahend) is illustrated by the RED blocks whereas the minuend is by the BLUE blocks. Click BEGIN problem to start solving.

Drag a red block on top of a blue to “subtract” —they cancel each other. Drag bigger place values to the column on their right to “break them up”—in other words regroup or borrow.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_155\\_g\\_1\\_t\\_1.html?from=category\\_g\\_1\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_155_g_1_t_1.html?from=category_g_1_t_1.html)

### Callum's Addition Pyramid

Add the pairs of numbers to get a number on the next level and finally the top number. Three difficulty levels.

<http://www.amblesideprimary.com/ambleweb/mentalmaths/pyramid.html>

### Techno Tortoise

Practice adding two two-digit numbers in parts on a number line.

<http://www.ictgames.com/technowithflock.html>

### Mr. Martini's Classroom: Addition and Subtraction Inequalities

Compare expressions that involve addition and subtraction of one and two-digit numbers.

<http://www.thegreatmartinicompany.com/inequalities/number-comparison.html>

and

<http://www.thegreatmartinicompany.com/inequalities/add-subtract-comparison.html>

### **Mr. Martini's Classroom: Long Addition**

Practice adding two-digit numbers in columns online.

<http://www.thegreatmartinicompany.com/longarithmetic/longaddition.html>

### **Mathionare Addition Quiz**

Answer increasingly more difficult addition questions (one and two-digit numbers), and win a million!

<http://www.mathsisfun.com/games/mathionaire-addition-quiz.html>

### **Button Beach Challenge**

Figure out what number the various colored buttons represent.

<http://www.amblesideprimary.com/ambleweb/mentalmaths/buttons.html>

### **Teaching Treasures - Year 2 Maths Worksheets**

Simple online addition and subtraction worksheets where the student types in the answer and can check it.

[http://www.teachingtreasures.com.au/maths/maths\\_level2.html](http://www.teachingtreasures.com.au/maths/maths_level2.html)

### **Euclid's Game**

An online version of Euclid's game (a Java applet).

<http://www.cut-the-knot.org/blue/EuclidAlg.shtml>

### **Count on Convict**

Practice “adding up” strategy for mental subtraction. First type the amount to move on to the next whole ten, then count on tens, then the rest.

<http://www.ictgames.com/countonconvict.html>

### **Double Digit Addition**

Match the addition problem with the correct sum. Enjoy!

<http://www.quia.com/mc/818288.html>

### **Addition Level 2**

A matching game where you add a one-digit number and a two-digit number.

<http://www.quia.com/mc/65798.html>

### **Speed Grid Addition**

Find numbers on the grid that add up to the given number. This uses both single-digit and two-digit numbers.

<http://www.oswego.org/ocsd-web/games/SpeedGrid/Addition/urikares.html>