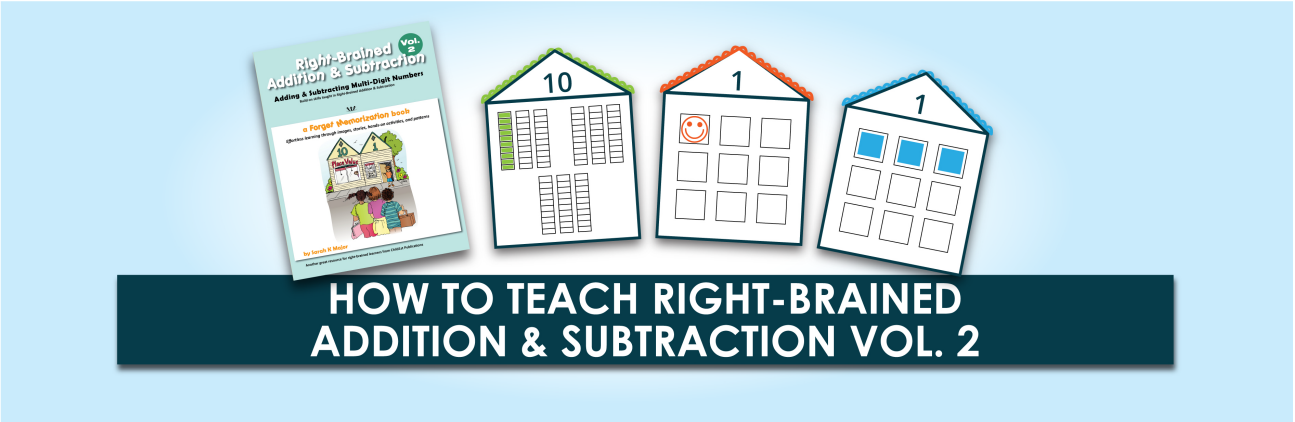


Right-Brained Addition & Subtraction, Vol. 2

Concepts to understand & teach

This User Guide is designed to give you a birds-eye view of the purpose of this book, outline the primary skills the students will gain, and provide a synopsis of those skills and how they differ from traditional approaches to adding and subtracting multi-digit numbers.

Many students who struggle with adding and subtracting numbers larger than one digit have trouble because they are not familiar with their math facts, they get lost when trying to follow the steps to solve a problem, or they are unable to remember those steps to begin with. Very often, also, students are so focused on remembering the steps to solve the problems that they don't focus on, or maybe didn't ever understand, what is actually happening in each problem.

Another barrier to success for these students is that it is fun for almost no one to learn, remember, and use steps. What IS fun and engaging is solving a problem when you understand the problem and feel competent to solve it.

The method this book lays out solves all these problems by simplifying the procedure and by avoiding the need to add numbers whose sum is greater than 10. The book also supplies ample hands-on and tactile/visual practice that shows the students what is happening so they can understand the point of the work.

These differences in approach are transformative for students who have struggled with math.

Hints for success

- Show the action (what is happening in the problem we are solving). This will help children remember what to do to solve a similar problem in the future.
- Allow children to practice the action and then settle into the method of solving the problem that works best for them.

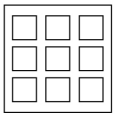
- What does place value mean?
- What does it mean to make a ten?
- What does it mean to take from ten?

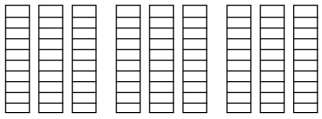
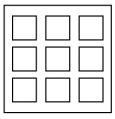
1. WHAT DOES PLACE VALUE MEAN?

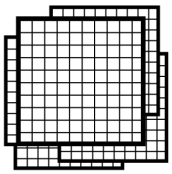
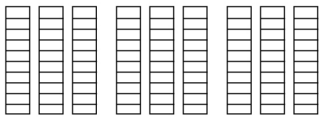
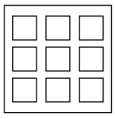
A. When adding numbers with sums larger than 10, we will write the answers using digits 1-9 placed side by side. For example: 27, 326, 7632, 99081, 453678, and so forth.

B. Where these digits are placed in the lineup will show their value.

For Example: A nine changes in value depending on where it is.

9 =  nine ones

99 =  nine tens + 

999 =  nine hundreds +  nine tens +  nine ones

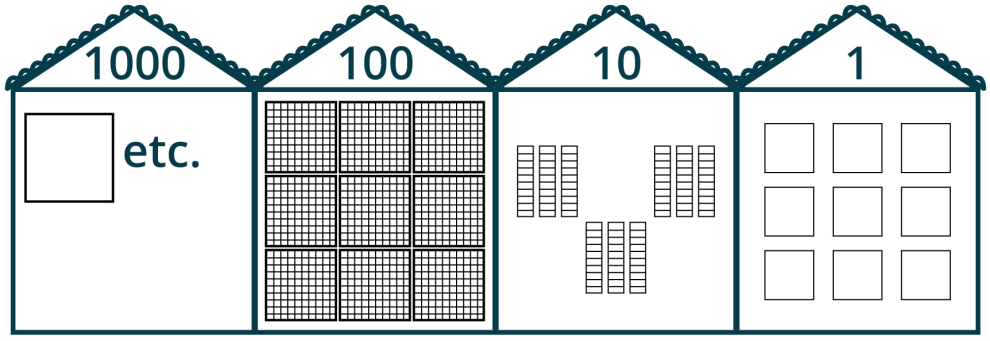
C. Zeros help put numbers in the right place to show the correct value:

9 has no zero and its value is 9 ones.
90 has one zero that pushes the 9 left one place, and its value is 9 tens. (10s)
900 has two zeros that push the 9 left two places, and its value is 9 hundreds. (100s)
9000 has three zeros that push the 9 left three places, and its value is 9 thousands.

D. Each digit in every multi-digit number has a place (“house”):

Each digit in every multi-digit number has a place (or office)

Only up to 9 can fit in each office
These offices are full



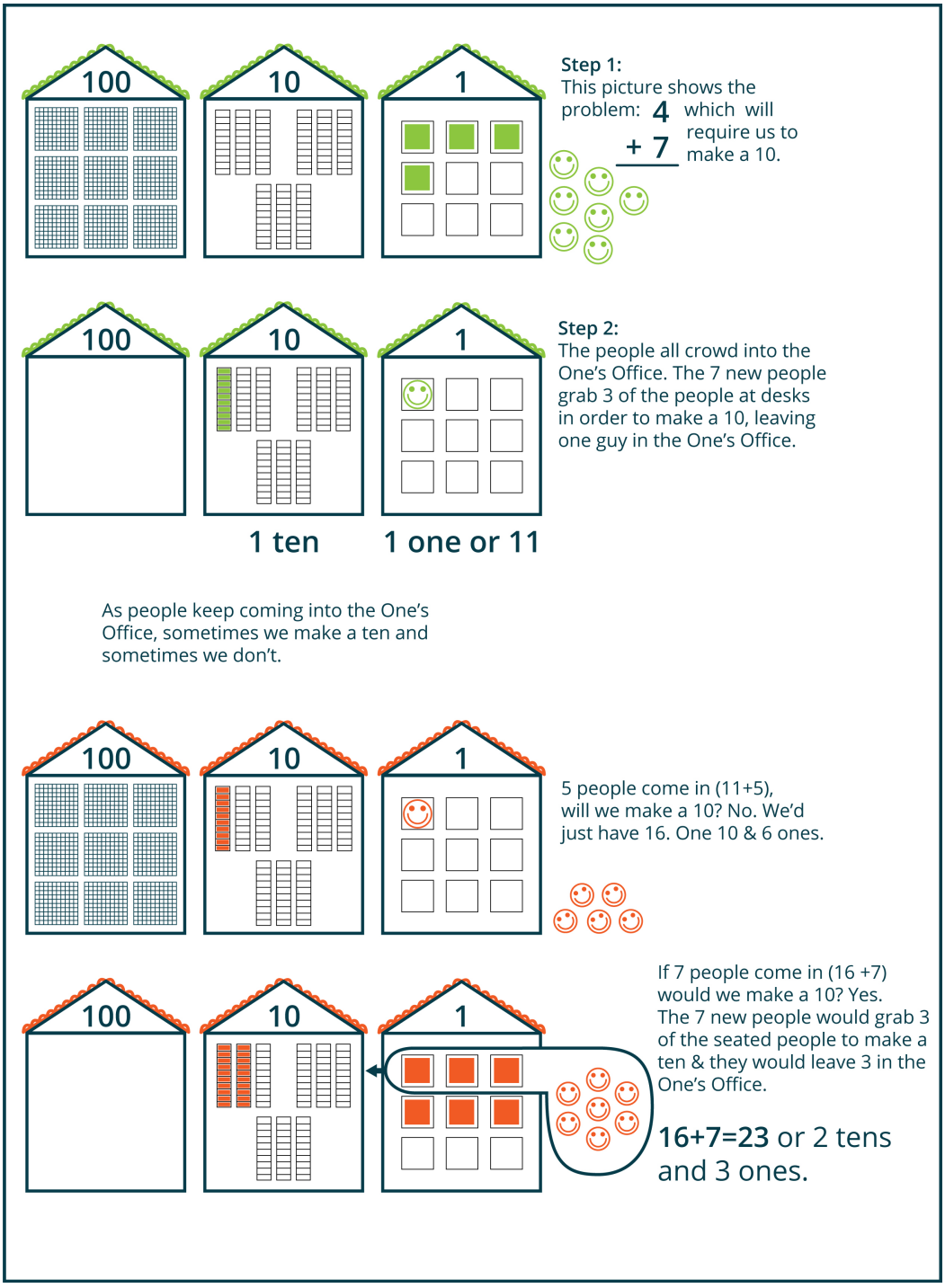
1. WHAT DOES IT MEAN TO MAKE A TEN?

a. When we add multi-digit numbers, our computation is based on making tens.

b. In any column of the problem, once the numbers we add are larger than 9, we must make a ten and move it to the left one place.

c. The story of making a ten.

"There are nine desks in the Ones Office. People come in to rent desk space. Once the 9 desks are full, if more people come in to rent a desk, 10 of the people make a group and move into the Tens Office next door, occupying a long table together.
When those 9 tables are full, if another group comes in the door, all ten groups bundle together to make a crowd of 100 people and together they move left into the Hundreds Office."



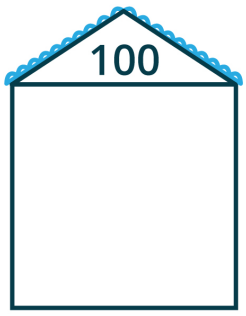
*HINT: When making a ten, always start with the largest number and take what you need to make a ten from the smaller number. In this way, you will only ever need to add 6+4, 7+3, 8+2, or 9+1. You will also only ever be taking a 1, 2, 3, or 4 from another 1 digit number, which will go a long way toward making multi-digit addition & subtraction super kid friendly.

2. WHAT DOES IT MEAN TO TAKE FROM TEN?

a. When we subtract, sometimes we are supposed to subtract a number from a smaller number.

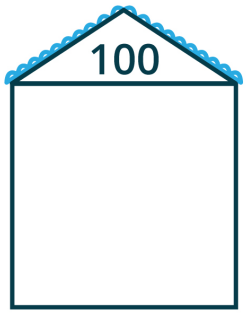
b. When this happens, we take a ten from the column to the left and unbundle it to subtract the number from.

c. The leftovers stay in the column you are working in.

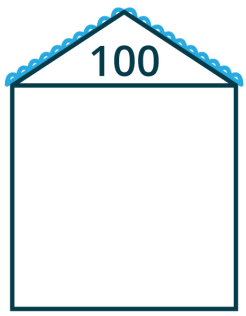


Starting:
The picture show 2 tens and 3 ones, or 23.

Action:
5 people quit and no longer want to rent space.



Question:
Can we take 5 people from the One's Office? NO.
But we can ungroup a 10 from the Ten's Office and take 5 people from there.



Ending:
We take 5 from a ten.
Those 5 go away.
The leftovers go to the One's Office. Now we only have the 1 ten and we have 8 ones.

23–5=18

Let's begin with the same set up we had when making tens.

Using this method, children will only ever be subtracting 1-digit numbers from 10 and will only be adding single digit numbers that equal a number smaller than 10.
Right-Brained Addition & Subtraction, Vol. 2 details step-by-step exactly what to do, how to teach these three concepts, and contains all the hands-on activities and student worksheets you will need.

The Teaching Cards are also a handy resource for the adult. On the reverse of the card is the mini-lesson, the hand motion, and the activity. While you can show your students the front of the card, you can sneak a peak at the back and remember all the stuff you wanted to say and do.