LESSON 11

Rounding to Hundreds

Multiple-Digit Addition with Regrouping

As always, add the units first. A student may become so proficient at adding multiple-digit numbers that he can add from the left, but that method is not appropriate at this stage. For now, always add from right to left, or from least to greatest. Remember that you add units to units, tens to tens, and hundreds to hundreds. Whenever you add two numbers, always add the same values. "To combine, you must be the same kind." The examples show the same problems worked out with place-value notation and regular notation. If your student uses lined paper, I suggest you turn it sideways to help keep the values in the proper places.

Rounding and Estimating to Hundreds

When adding greater numbers, encourage the student to estimate the answer first. We have learned how to round and estimate to the tens place. Now we will increase our understanding by rounding and estimating to the hundreds place.

When you round a number to the nearest multiple of 100, there will be a number in the hundreds place but only zeros in the tens and units places that are to the right of the hundreds place. When rounding, only look at the digit to the immediate right of the place value being considered—in this case, the tens place. This digit determines whether the one in the hundreds place will stay the same or be increased by one. I tell the students we call it rounding because the tens and units are going to be "round" zeros. When we round a number such as 653, we can see one reason why we recommend rounding 5s up instead of down. Although 650 is halfway between 600 and 700, all the other 650s (651, 652, and so on) are closer to 700. Rounding 5s upward makes sense because, if there is another non-zero digit, the number will be closer to the greater number.

When comparing an estimated answer to the final answer, you sometimes see a fairly large difference. For example, 451 will round to 500, and 352 will round to 400. Adding 500 + 400 gives 900, but 451 + 352 is only 803. Remember that an estimate is not intended to be exact. The time to be concerned would be if the final answer were 8,000 or 80.

Example 1
Round 383 to the nearest hundred.

The first step is to find the two multiples of a hundred that are nearest to 383. The lesser one is 300, and the greater one is 400 because 383 is between 300 and 400. If the student has trouble finding these numbers, begin by placing your finger over the 83 so that all you have is a 3 in the hundreds place, which is 300. Then add one more to the hundreds to find the 400. I often write the numbers 300 and 400 above the number 383 on both sides, as shown in Figure 1.

Figure 1

300 400
383

Look at the digit in the tens place. Does it fall in 0 through 4 or in 5 through 9? Since it is an 8, it is in the latter group, which means we round up to the next hundred, which is 400. Rounded to the nearest hundred, 383 is 400.

Example 2
Round 547 to the nearest hundred.

500 600
547

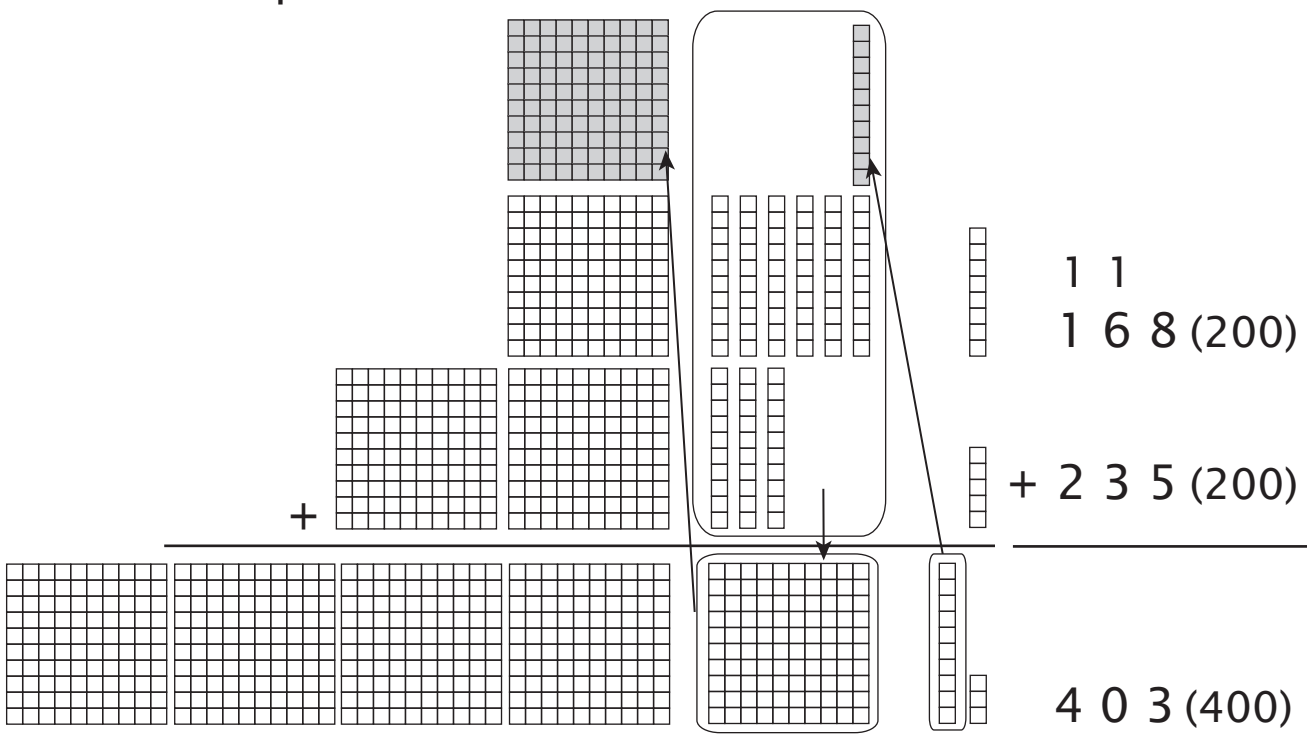
1. Find the multiples of one hundred nearest to 547.

500 600
547

2. We know that 4 goes to the lesser number, which is 500.

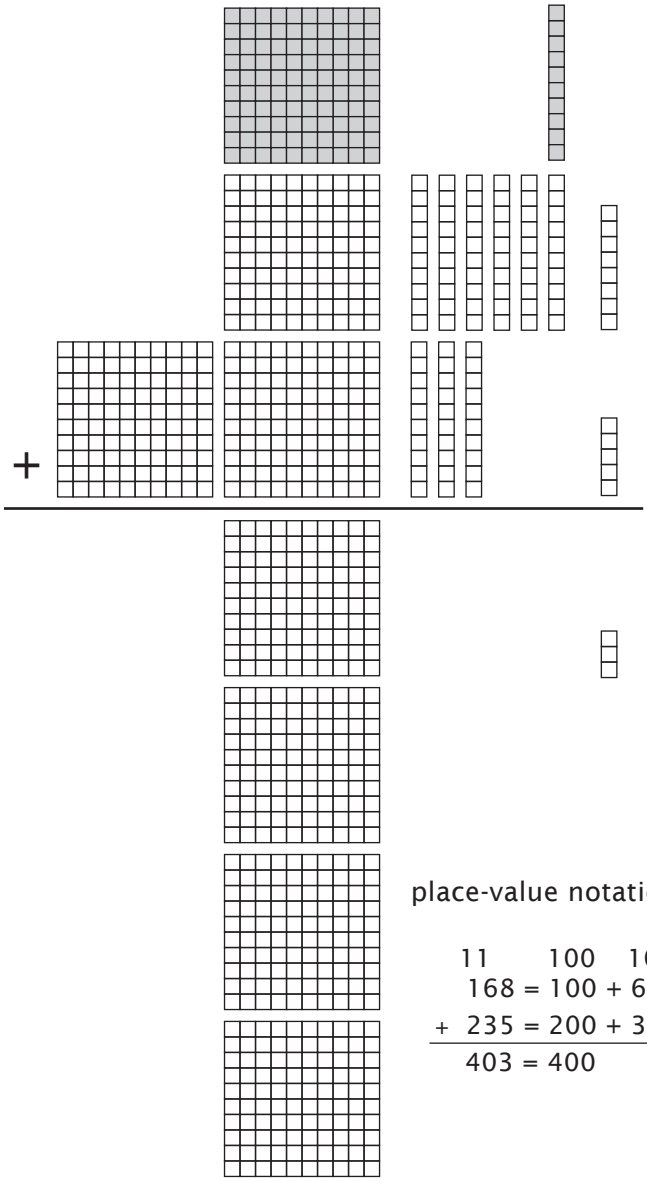
In Examples 3 and 4, the estimates are to the right in parentheses.

Example 3



Five units plus 8 units equals 13, which is 1 ten and 3 units. We move the ten to the tens place, as indicated by the arrow. Then 6 tens plus 3 tens plus the 1 ten from the result of adding in the units place equals 1 hundred. The 1 hundred is moved to the hundreds place as shown. Example 3 is continued on the next page.

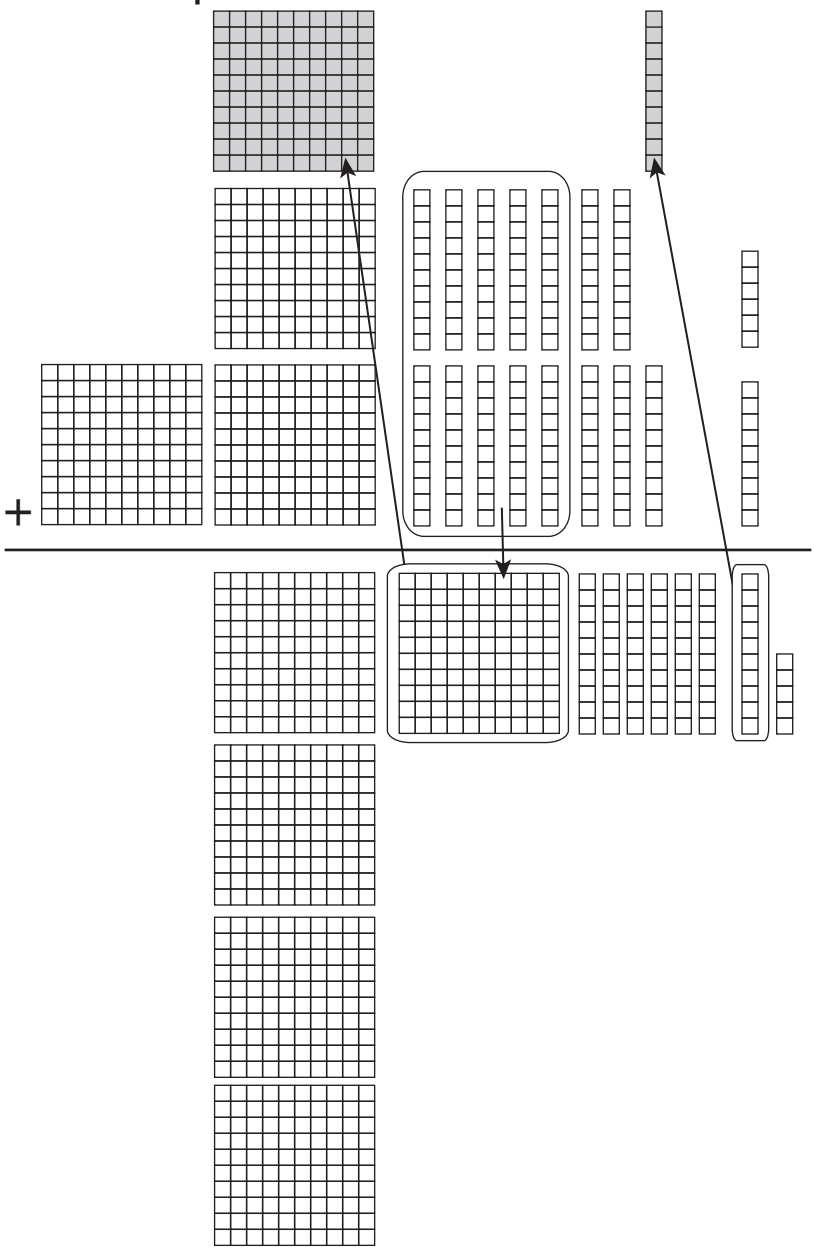
Example 3 (continued)
Adding all the hundreds gives us the answer of 4 hundreds, 0 tens, and 3 units, or 403. The picture below shows the result after regrouping.



1 1
1 6 8 (200)
+ 2 3 5 (200)
4 0 3 (400)

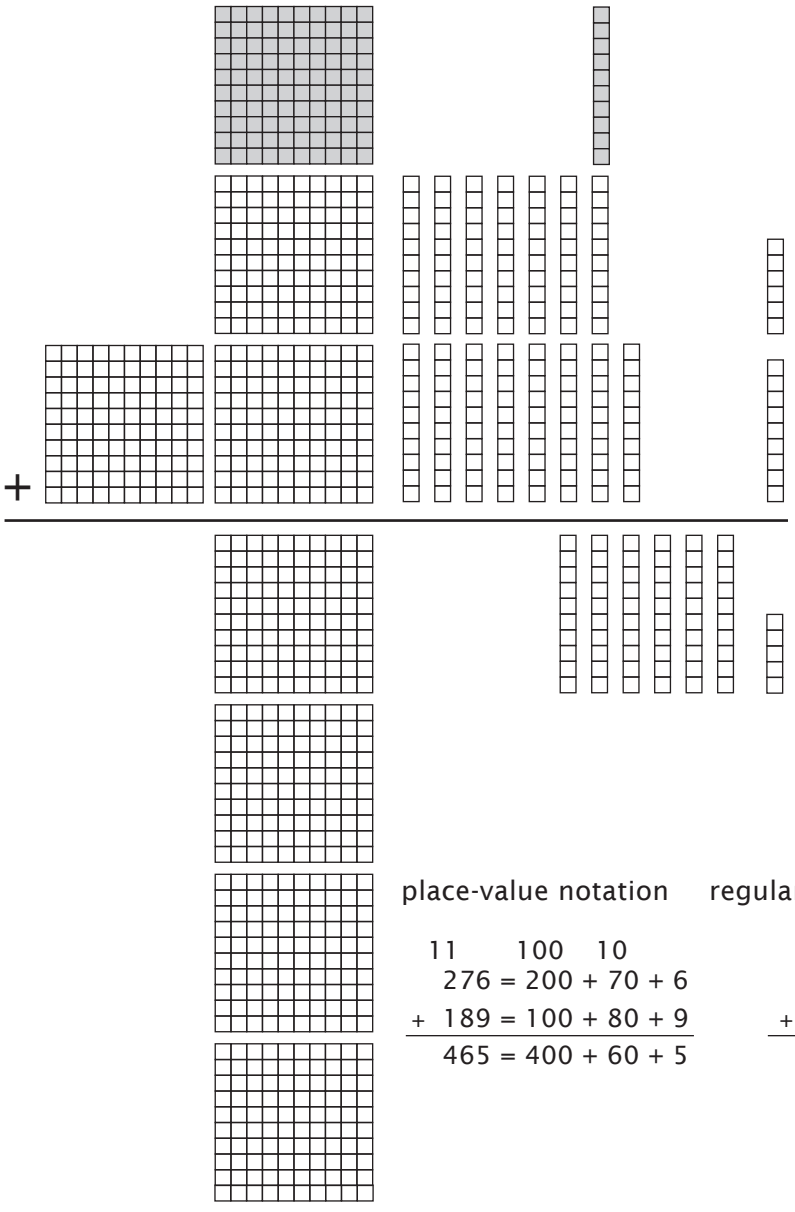
place-value notation	regular notation
11 100 10	11
168 = 100 + 60 + 8	168
+ 235 = 200 + 30 + 5	+ 235
403 = 400 + 3	403

Example 4



1 1
2 7 6 (300)
+ 1 8 9 (200)
4 6 5 (500)

Example 4 (continued)



1 1
2 7 6 (300)
+ 1 8 9 (200)
4 6 5 (500)

place-value notation	regular notation
11 100 10	11
276 = 200 + 70 + 6	276
+ 189 = 100 + 80 + 9	+ 189
465 = 400 + 60 + 5	465