**Simple Adding**

To add, for example, 4 apples and 3 apples: First enter 4 (Fig. 1). Next, place a finger after the 4 and enter 3 more (Fig. 2). Remove the finger and add the quantities by pushing them together (Fig. 3). The sum of 7 is immediately obvious without any counting. The finger as separator is needed only for the first few additions.

**Addition Strategies**

An addition strategy is an efficient technique for recalling an addition fact. Counting is slow and often inaccurate. Rote memory is high maintenance, requiring frequent review. It also hampers integrating new concepts and applying knowledge.

A visual strategy for 4 + 3 is to take one from the 3 and give it to the 4, making 5 and 2, which the child learned previously with fingers (Fig. 4). Later, ask the child to do this mentally.

**U.S. Money**

It is very easy to represent money on the abacus; there are 100 beads to represent a dollar. A single bead is a penny, a group of five is a nickel, a whole row is a dime, and each of the four groups shown at the right is a quarter (Fig. 7).

**Multiplication**

To demonstrate multiplication, ask the child to enter 6 four times. Explain that the abacus shows 6 taken four times, which we write as $6 \times 4$. Let the child find the product, 24 (Fig. 8).

**Bead Trading**

To understand the pattern of trading—that 10 ones is 1 ten, 10 tens is 1 hundred, and 10 hundreds is 1 thousand—children must work with numbers beyond 99.

On the reverse side of the abacus is a label indicating 1000, 100, 10, and 1. This more abstract though traditional use of the abacus stresses “trading” or carrying. Note that two wires are used for each denomination. Keeping the two columns as even as possible makes trading easier.

For example, in adding $8 + 6 = 14$, we cannot have more than 9 ones. To trade, move down ten 1-beads (five from each wire) and move up one 10-bead. Use your right hand for the ones and your left hand for the ten. Ask the child to read the sum before and after trading, shown below (Fig. 9 and 10).

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**Figures:**
- Fig. 1: entering the 4.
- Fig. 2: entering the 3.
- Fig. 3: adding them together.
- Fig. 4: 4 + 3 = 7
- Fig. 5: 9 + 6 = 15
- Fig. 6: 6 + 7 = 13
- Fig. 7: U.S. money
- Fig. 8: 6 x 4 = 24 (6 taken 4 times)
- Fig. 9: 8+6 Before trading
- Fig. 10: 8+6 After trading
Adding Four-Digit Numbers

Example: 5248 + 1937. First, enter from left to right the number 5248 (Fig. 11).

Start the addition of the second number by adding the 7 ones, which gives 15 ones (Fig. 12). Trade as shown below (Fig. 13). It is very important to record the results of each step; write 5 ones and an extra ten.

Next, add the 3 tens and record that result, 8 tens, as shown (Fig. 14).

Then, add the 9 hundreds; another trade is necessary. Again, record the results, the 1 hundred and the extra 1 thousand (Fig. 15 and 16).

Finally, add the thousands; no trade is necessary. The solution is 7185 (Fig. 17). After 6–10 problems adding four-digit numbers, most children can do these additions on paper without further instruction.

References

Cotter, Joan A. “Using Language and Visualization to Teach Place Value.” Teaching Children Mathematics 7 (October, 2000): 108–114. (joancotter@alabacus.com)