How RightStart™ Mathematics Differs From Other Programs

by Joan A. Cotter, Ph.D.

Following are some of the principles that make the RightStart approach different from traditional primary mathematics as taught in the U.S.

• **Minimizing counting.** We know from research that 5-month-old babies are able to add and subtract up to 3. This they do, not by counting, but by visualizing quantities. Since young children lack an appreciation of the cardinality principle, the counting ritual of pointing while reciting a number word does not advance their understanding of quantity. RightStart teaches the child the names of the quantities 1-5 with objects in the environment and with the requisite number of fingers raised on one hand.

• **Grouping in fives.** It is relatively easy to detect up to five objects—five can be distinguished from four because it has a middle while four does not. Beyond five, very few people can identify or visualize objects. Thus, the Romans grouped their numerals in fives; consider VIII (8). Orchestral arrangers grouped the 10 lines of music into two staffs with five lines.

In RightStart, the children learn 6-10 initially through one hand with five plus the second hand with the remaining fingers. A special song helps them associate the words with correct fingers.

• **Naming numbers explicitly.** In the U.S. children speaking English experience considerable difficulty learn place value. Indeed, only half of them master it by the end of the fourth grade. On the other hand, Asian children master place value in the first grade. Students who do not understand place value cannot understand the common algorithms for basic operations. Asian languages support this understanding through explicit number naming. For example, numbers 11-13 are called "ten-1, ten-2, ten-3" and 20-22 are "2 ten, 2 ten-1, 2 ten-2." RightStart suggests this for six months in kindergarten and three months in the first grade.

It is interesting to note that Japanese teachers of primary children utilize the above three principles. Students are taught to visualize in groups of five, and not count, to find sums. For example, to find 4 + 3, they visualize 4 and 3; then they take 1 from the 3 and give it to the 4, resulting in 5 + 2, which they already know. Japanese teachers believe that rote counting does not further a child's mathematical ability. In other words, counting to 100 is no more helpful in learning math than reciting the alphabet helps in learning to read.

• **Overlapping place-value cards.** Children have difficulty with the concept that the 3 in 32 actually means 3 tens. Their initial experiences with multi-digit numbers do not have this connotation. Think of house addresses, phone numbers, and athletic shirts emblazoned with 32. Are there 32 people in the shirt?

RightStart uses place-value cards. For example, the card with "30" is read 3-ten. To build 32, the child places the 2-card on the 0 of the 30-card, forming 32. See the figures below, which show building 32 and also building 832.

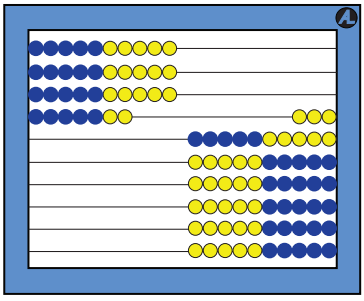


Also note these cards encourage reading numbers in the normal left to right order; whereas, often students are taught to read a number starting at the ones column.

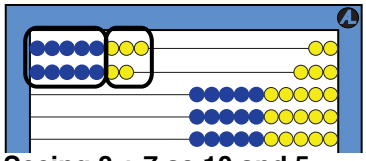
• **Introducing thousands in the irst grade.** To understand the never-ending pattern that ten ones equals 10, ten tens equals 100, ten hundreds equals 1000, and so forth, children must work with thousands and not stop at 99, which is so common with other programs. In first grade with RightStart, the children learn to add four-digit numbers with trading. This is an example of the principle of giving the child the whole picture before working with details.

• **Computing mentally.** Most people when adding 24 + 38 compute it mentally, rather than resorting to paper and pencil or a calculator. Therefore, in RightStart, first graders learn to add two-digit numbers mentally. They use the efficient method of starting at the left.

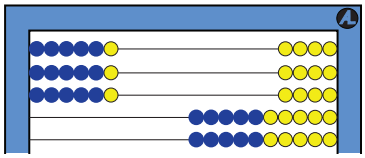
• **Working with the Cotter Abacus.** To continue developing the visualization skills they possessed as infants, children use the Cotter Abacus as shown below. The beads are grouped in fives and tens to allow quick recognition and subsequent visualization. The reverse side teaches trading in the thousands. I asked Stan, age 5, what is 11 + 6. When I asked him how he knew, he replied, "I have the abacus in my mind."



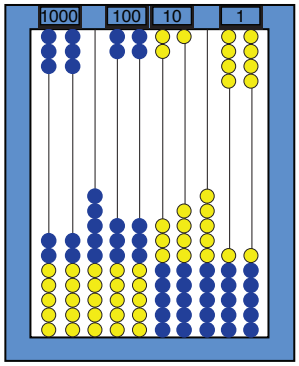
Cotter Abacus with 37 entered.



Seeing 8 + 7 as 10 and 5.



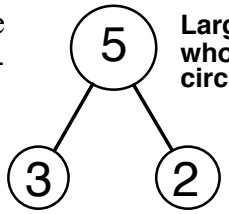
Multiplying 6 x 3.



Side 2 with 6438 entered.

• **Playing games.** Flash cards are not part of RightStart. The only persons who like them are those who do not need them. With flash cards students do not learn better methods; they merely practice their old habits, albeit faster. Frequently, they merely become faster counters. Flash cards and timed tests come with a tremendous cost: the stress takes the joy out of learning mathematics. We have millions of people in this country who avoid math whenever possible; many have told me that is the reason. Instead, the children using RightStart play games to become fluent with their facts and computation. Games are to math as books are to reading. Parents are encouraged to play games with their child, not help with an obscure worksheet. There is an auxiliary book, *Math Card Games,* with 300 games.

• **Partitioning with Part-Whole circle sets.** Part-Whole circle sets, shown on the right, help children solve problems and integrate addition and subtract. Children in the first grade can even solve missing addend problems. Note that subtraction is taught only after addition is mastered.



Large circle is the whole; smaller circles are parts.

• **Using correct vocabulary.** RightStart stresses correct terminology. *Equation,* which indicates equality, is used rather than "number sentence." The phrase "take away" is avoided because it limits students' understanding of subtraction — sometimes subtraction is going up, as in making change. *Trading* is used instead of "regrouping" because the latter does not imply equality to children as does trading.