

Alternative Algorithms

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The goal of this presentation was to provide an opportunity for participants to learn some alternative computation algorithms in a non-threatening environment. They would also be able to return to their districts with an activity to use with their colleagues. Our presentation was meant to help teachers feel comfortable and successful with the algorithms and to provide the teachers with hands-on experience using them.

Sandy McFarland began the presentation with a brief overview and discussion of *Everyday Math* research on alternative algorithms. Then Diana Allen explained the Algorithm Jigsaw activity. Each table of participants worked on a different alternative algorithm, using handouts from *Everyday Math* to learn how the algorithm works. The algorithms included the following:

- *Partial sums addition algorithm.* This algorithm is done in two steps. First, the place values are added (usually starting with the largest place). Then these “partial sums” are added together.
- *Trades-first subtraction algorithm.* In this algorithm, the “trading” of, for example, hundreds for tens or tens for ones, is done for all the places first, as needed. The subtraction in each column is computed after all the trading has been completed.
- *Partial products multiplication algorithm.* In this algorithm, partial products are computed by multiplying each of the digits from one factor with the digits from the other. Then the partial products are summed.
- *Lattice multiplication algorithm.* Using a grid, the factors to be multiplied are placed on the outside of the grid and the multiplication is done digit by digit within the grid. The numbers in the grid are added diagonally to form the product.
- *Partial quotients division algorithm.* This algorithm is an extended version of the standard “long division” algorithm. Multiples of the divisor are subtracted from the dividend and the numbers multiplied with the divisor are the partial quotients. These are added to compute the complete quotient.

After each group of participants spent time working together on an algorithm, they were put into new groups, where each person reported to the others on the algorithm she or he had learned. All participants received a booklet that included copies of the information for each algorithm, as well as a description of the jigsaw activity and two readings about *Everyday Mathematics* and algorithm use in this curriculum: “Algorithms in *Everyday Mathematics*” by Andrew C. Isaacs and the *Everyday Mathematics* Research Summary. (Both are available online at <http://everydaymath.uchicago.edu/educators/references.shtml>.)

Teachers at the Alternative Algorithms concurrent session: (*top photo*) Josea Eggink in the center and Frieda Yates on the right, both of Bartholomew; (*bottom photo*) Jayson Rigsby (Pike) on the left and Mike Allen (Vigo) on the right.

