

# Research: Subtraction Facts 10 to 18

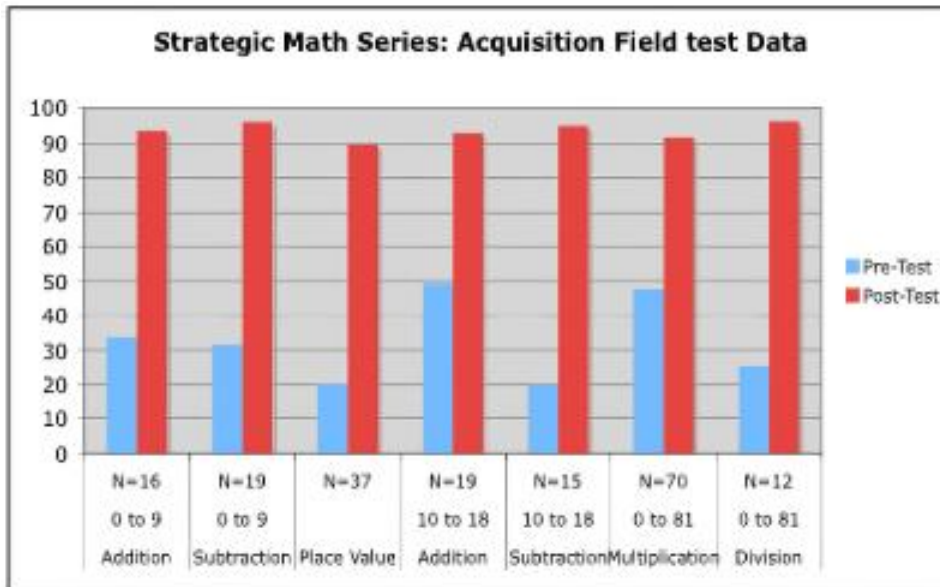
## Overview

Multiple field tests were conducted that involved 56 teachers and 248 elementary students who were experiencing difficulties learning math. These field tests took place in seven school districts in self-contained, resource, and general education classes. The teachers were trained to use programs in the Strategic Math Series. Different groups of students were taught addition facts, subtraction facts, multiplication facts, division facts, and place value concepts and skills, depending on their needs.

## Results

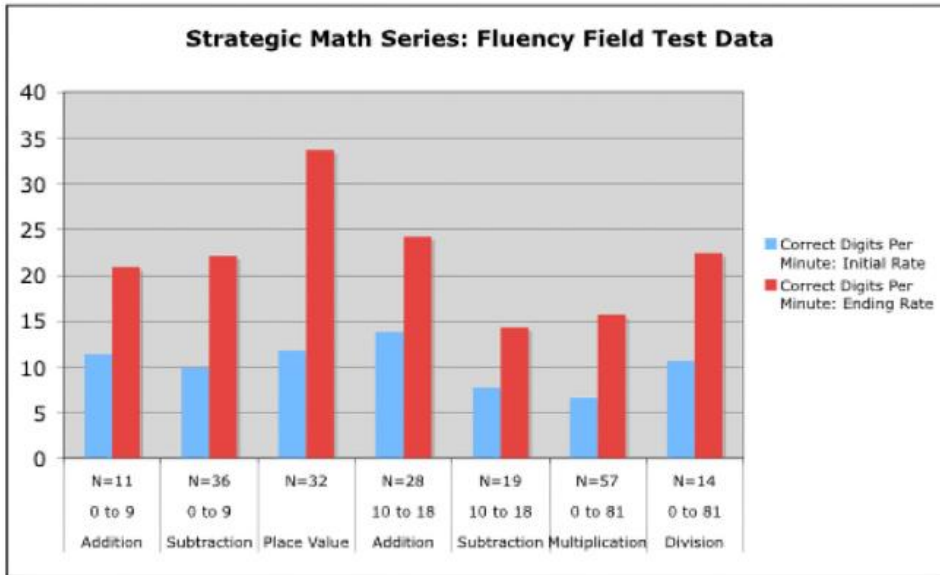
Substantial gains were made by the students in all areas. See the figures below for the results in each math area. Figure 1 shows the results on untimed acquisition tests, and Figure 2 shows the results on timed proficiency tests (i.e., fluency tests) The number of students participating in each field test is shown beneath each pair of bars on the graph.

Figure 1: Percentage of answers correct on untimed acquisition tests



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Figure 2: Percentage of digits correct per minute on fluency tests



The results for the Subtraction Facts 10 to 18 program are shown in the fifth pair of bar graphs in each figure. For the Subtraction Facts 10 to 18 program, students earned a mean score of 20% on the untimed acquisition pretest and a mean score of 95% on the posttest. They produced an average of 8 correct digits per minute in baseline and 14 correct digits per minute after instruction.

## Conclusions

The programs in the Strategic Math Series produce substantial gains in student performance on math acquisition and fluency tests across several areas of mathematics. In addition, these programs all produce socially significant final performances with students earning scores around or above the 90% level on acquisition tests in all areas.

## Reference

Miller, S. P., & Mercer, C.D. (1998). *Strategic Math Series professional developer's guide*. Lawrence, KS: Edge Enterprises.