

Developing Efficient Computation with Mini Lessons

Topic: Developing Multiplication Strategies

Mini-Lesson Background

Mini-Lessons¹ are short 10 to 15 minute engagements focused on computation using a strategically designed set of related examples used to highlight and develop number relationships and operations. These collections of problems will be referred to as “strings” and will contribute to the development of efficient mental math computation.

Content Standards

- » *Number and Operations in Base 10 (Grade 4)*
 - » Use place value understanding and properties of operations to perform multi-digit arithmetic.
 - » Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Practice Standards

- » *Make sense of problems and persevere in solving them*
Students persevere to understand and solve the problem.
- » *Model with mathematics*
Students create representations and number sentences associated with the problem.

¹ The development of efficient addition and subtraction computation can be found in *Young Mathematicians at Work: Constructing Multiplication and Division* pp. 33-49 (Fosnot & Dolk, 2001)

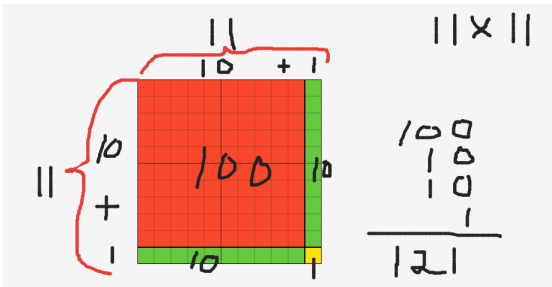
Multiplication Mini-Lessons

Examples:

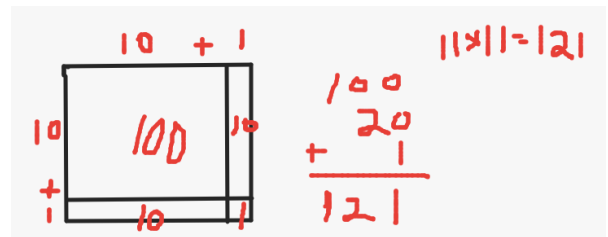
Solve the following problems using the Number Pieces app. Show a representation of the thinking you used to solve the problem. (You can use an open array representation to show your work.)

Example: 11×11

On Number Pieces app



Open array written on paper



12×12

12×13

15×16

16×16

Solve and show each of these examples using an open array representation.

20×16

37×15

24×13