Math That Works: Array Multiplication

In this video, a Grade 5 class learns how to multiply using arrays. The video demonstrates moving from concrete, to pictorial, to symbolic representations of array multiplication.

Both one-digit and two-digit multiplication are modelled.

This learning guide is designed for use by instructional leaders and learning communities, or as a self-paced study to explore multiplication strategies.

▶

This learning guide is intended for use after viewing the video Multiplication Strategies (length 6:00).

General Synopsis: An array is an arrangement of objects into rows and columns. Arrays are useful in helping students understand multiplication.

Key understandings:

- Students may use a variety of strategies to solve multiplication problems. One strategy is array multiplication.
- An array is used to illustrate multiplication concepts by arranging objects into equal rows and equal columns.
- Friendly numbers are numbers that are easy to use in calculations. Friendly numbers are usually multiples of 10 or 5.
- The order in which we multiply two numbers does not affect the product (commutative property of multiplication).
- The numbers in a multiplication expression can be decomposed to make solving the equation easier. For example, 53 x 24 can be expressed as (50 + 3) x (20 + 4). The student then multiplies (50 x 20, 50 x 4, 3 x 20, 3 x 4) and adds all the products to solve the equation.
- Breaking numbers into parts in this manner can make it easier to find the product.
- Students should be able to explain the strategy they are using and compare their strategy to those used by other students.

Questions for discussion:

Array Multiplication: 00:00 – 3:14

- How does an understanding of the distributive property of multiplication help students multiply?
- Does it matter which order the partial products of the array are calculated and recorded?
- How can an array help students determine the product of 357 x 8?

Using Blank Arrays: 03:14 – 6:00

- In the video, students moved from a concrete understanding of the array to a pictorial understanding and then a symbolic understanding. Is it necessary for students to understand all three models of array multiplication? Why or why not?

References:

- ARPDC, *Elementary Mathematics Professional Learning; Multiplicative Thinking*: http://learning.arpdc.ab.ca/mod/page/view.php?id=9212
- Van de Walle, Karp, Lovin & Bay-Williams, *Teaching Student-Centered Mathematics*, 2014, page184.

EDMONTON Regional Learning CONSORTIUM
Partners in adult learning for students' sake
www.erlc.ca

St.Benedict Catholic School
INSPIRED BY THE HOLY SPIRIT

pdc AlbertaRegionalConsortia

September 2016