



# YALE NATIONAL INITIATIVE

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Curriculum Units by Fellows of the National Initiative  
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## **Algebra Really Is Just Arithmetic**

Guide for Curriculum Unit 11.06.04, published September 2011

by Michael Pillsbury

This unit has been developed for use in a middle-school mathematics classroom. The concept of this unit is to provide middle-grades students a better understanding of place value and then relate this understanding to Algebra. Students will begin by using exploding dots which is a new concept for exploring the base ten number system. Teachers can also use exploding dots to explore other base number systems and model how our own base ten number system functions while performing operations. From exploding dots students will move on to explore writing numbers in expanded form and then perform operations with those same numbers. This concept may seem simple on the surface but it is very rich in math content. Students will practice working with exponents and writing numbers in base ten as well as understanding why they "carry" and "borrow." The culmination of the unit brings us to the connections of arithmetic and Algebra. Students will see the connection to Algebra through an understanding of the addition and multiplication properties, as well as the relationship of operations using base ten and operations with variables.

(Developed for Mathematics and Mathematics Honors Level, grade 7; recommended for Mathematics, grades 7-8, and Mathematics Honors Level, grade 7)

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