

Backwards Numbers: A Study of Place Value, 2009

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Synopsis

This unit is designed to develop number sense of place value with fourth grade students. It may also be used with third and fifth grade students. The lessons in the unit have students add numbers first by writing down the steps for using the standard algorithm for addition. Next, the students design their own algorithm for adding numbers, but by starting on the left side instead of in the ones column. Additionally, students learn about our Base 10 number system, the Base 2 number system, and design their own number system using a technique called Exploding Dots. In this system, once a particular place value is full of the maximum amount of dots it may hold (according to a set rule that is established by the teacher or the student), those dots “explode” and form one dot in the adjacent place value column. These lessons are best used with students who have a concrete understanding of place value, as well as a representational understanding of place value. These lessons are designed to enhance the understanding of students who are working with the standard algorithm for addition.