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Curriculum Units by Fellows of the National Initiative

2007 Volume VI: Keeping the Meaning in Mathematics: The Craft of Word Problems

Dr. Word Problem - Solving Word Problems with the Four Operations Using Singapore Bar Models

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Dr. Word Problem is a unit designed to examine the structure of word problems involving the four operations of arithmetic. This unit focuses on teaching a strategy that is a visual approach to solving word problems. The students will be exposed to Singapore bar models as a technique to aid in understanding and solving problems. Students are taught how to represent word problems by drawing a Singapore bar model. The unit explores the bar models beginning with basic addition facts. The unit progresses to subtraction, multiplication, division, and multi-step problems. A key aspect of this unit is connecting the four operations. By developing children's understanding of the relationships that the four operations share, children will also build a stronger foundation that will be invaluable, especially as the multi-step problem domain is investigated. The unit also addresses common pitfalls and limited strategies to problem solving. Dr. Word Problem aspires to overcome these pitfalls by developing arithmetical understanding. This unit can also be adapted to work with word problems dealing with fractions and decimals. The models can also be used to solve algebra problems without using algebra.

(Developed for Mathematics, grade 4; recommended for Mathematics, grades 3-5)

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