



Curriculum Units by Fellows of the National Initiative

2017 Volume V: From Arithmetic to Algebra: Variables, Word Problems, Fractions and the Rules

Making Sense of Solving Equations Through Word Problems

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The purpose of this curricular unit is to improve my students' performance in solving linear equations and word problems by teaching the two topics simultaneously so that they can have a more positive and successful experience in high school math classes. This unit works to fully engage students from different cultures and levels of skill using word problems to flush out and address the many misconceptions and gaps in prerequisite skills and at the same time to help students construct deep conceptual understanding of the procedures of algebra. The focus of the unit is on helping students realize the efficiency of using algebraic equations as they work through progressively more complex word problems using both an arithmetic approach and a procedural algebra approach. It is expected that their reliance on computational strategies will gradually transition to using procedural algebraic problem-solving strategies as problems increase in complexity and as they notice the limitations and benefits of both approaches. Furthermore I hope that facility with both approaches will deepen their understanding of algebra. Moreover I want my students to become flexible problem solvers, which means they can modify their approach when faced with challenges during the problem-solving process. In other words, they can start with an algebraic procedure then switch to an arithmetic approach if they realize their initial approach is too cumbersome or vice versa. Thus, they will effectively learn more about both approaches.

(Developed for Mathematics 8/Solving Equations with One Variable, grade 8; recommended for Algebra 1/Linear Equations, grades 7-9)

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