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Fearless Problem Solvers Can "Express" Themselves Mathematically

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My goal in this unit is to build a strong foundation for students to explore and understand algebraic expressions in a logical progression based on their prior knowledge. It is also my goal for them to apply their understandings to investigate the mathematics behind topics that matter to them. The core of the unit will be centered on developing strong, fearless problem solvers who understand shortcuts to become experts. Through focused problem sets designed to gradually extend subtopics of expressions, students will construct meaning about the properties of numbers and variables as we discover how these things work together in algebra. By reordering topics to present a logical progression of ideas, students' learning will be scaffolded to prevent burnout and promote the Standards for Mathematical Practice in the CCSS-M. Sense-making, tinkering, and developing problem solving strategies and skills will serve as the core of our class discussion as students define algebra within their own contexts to apply in a culminating project where they investigate issues that are important to them and apply their algebraic reasoning and skills to come up with viable solutions to share with our school community.

(Developed for Algebra I, grade 8; recommended for Algebra I, grades 8-9, and Pre-Algebra, grades 6-7)