This talk reports parallels observed between teachers’ and K-8 students’ conceptions of mathematical ideas involving units. A graduate program in K-8 mathematics education, funded by a Teacher Quality grant, provides a site for ongoing action research at two levels, investigating the mathematics learning of preK-8 mathematics teachers enrolled in the program as well as that of their students. Concepts of unit proved key across many courses, including in conceptual models for operations on whole and rational numbers, representations such as number lines and number circles, use of mathematical language, algebraic properties of operations and of units themselves, and the development of strategies for decomposing complex geometric shapes. (Received September 05, 2007)