Algebraic knowledge stems from integration of arithmetic and pre-algebraic knowledge. Current studies show this is a complex process. This paper reports on a longitudinal study designed to investigate students’ readiness for algebra, in terms of prerequisite knowledge from a cognitive perspective. In so doing it was necessary to explicate what constituted a pre-algebraic level of understanding. Thirty-three students in grades 7, 8, and 9 participated. A model for the transition from arithmetic to pre-algebra to algebra is proposed and students’ understanding of relevant knowledge is discussed. Results showed inadequacies in students’ prerequisite arithmetic knowledge and revealed aspects that require greater attention in early algebraic instruction.

Classification: C33