Summary: This article presents the results of a three-year study that explores students’ performance on patterning tasks involving prealgebra and algebra. The findings, insights, and issues drawn from the study are intended to help teach prealgebra and algebra. In the remainder of the article, the authors take a more global view of the three-year study on pattern generalization and focus on what they learned with an eye to describing the mathematical content knowledge for teaching (MKT). Andreas Stylianides and Deborah Ball point out that MKT pertains to those “particular forms of mathematical knowledge that is useful for, and usable in, the work that teachers do as they teach mathematics to their students” (2008, p. 308). The content and suggestions that the authors pursue in this article have been rooted in their experiences with typical students that most teachers encounter daily in their classes. (Contains 7 figures.) (ERIC)

Classification: H33 C73

Keywords: prealgebra; algebra; mathematical logic; generalization; longitudinal studies; pedagogical content knowledge; knowledge base for teaching; middle school students; teaching experiments