

a known fact and derive an answer to an unknown fact. In phase 3, children have mastered their facts and can efficiently produce an answer (Baroody, 2006). Progression through all 3 of these phases in the trajectory is promoted by meaningful practice of facts, making fact strategies explicit in the classroom and discussing and analyzing them, and focusing on key groups of facts for strategy development. Conventional approaches to learning facts often omit phase 2, where efficient reasoning strategies to solve facts are developed, which can result in children who are unable to call upon strategies to figure out answers to facts they don't know or have forgotten (Bay-Williams and Kling, 2014). Other research suggests that when children move to memorization of basic facts without a solid foundation of conceptual understanding and a toolkit of efficient strategies, they are less likely to think about numbers and their relationships and more likely to make errors (Boaler, 2015).

#### **Everyday Mathematics 4**

A major focus in kindergarten through second-grade mathematics is the development of fact fluency with basic addition and subtraction facts, and a major focus in third-grade mathematics is the development of fluency with basic multiplication and division facts. Fluency can be described as "the efficient, appropriate, and flexible application of single-digit calculation skills and is an essential aspect of mathematical proficiency" (Baroody, 2006). Moving through the 3 phases of the basic facts trajectory as described above can help children develop fact fluency. This approach to fluency is evident in *Everyday Mathematics 4*. Children first encounter the four operations within the context of number stories that they solve using models such as drawings and counters. In Kindergarten through Grade 3, numerous activities use *Quick Looks* images including dot patterns, five frames, ten-frames, double ten-

