During the early planning phase of *Everyday Mathematics 4*, a team of writers worked together to read and summarize the current body of research about facts. The information that follows is the summary of that research. For more information about the planning phases of *Everyday Mathematics 4*, see the paper "*Everyday Mathematics* and the Writing Process."

property. Through experiences with and observations of problems set in context, students develop a notion of the commutative property (NRC 2001, 75).

At the same time, children begin using counting down to determine solutions to

it is also helpful to discuss the advantages and disadvantages of different strategies (NRC 2001).

For subtraction, similar strategies are used, such as relating to tens, doubles, or related addition facts (fact families). Steinberg (1985) and Thornton (1978) both used an instructional focus of relating subtraction to addition (“think of the addition fact”) to

Multiplication and Division Facts

Division can be introduced at the same time by relating it to multiplication. Research suggests that children determine the operation (multiplication or division) by the position of the unknown (Kouba 1989). Thus, if a factor is unknown, children will utilize division, often even if it has

progress through as they develop mastery with facts: (1) modeling and/or counting to find the answer, (2) deriving answers using reasoning strategies based on known facts, and (3) mastery or efficient production of answers. As students work through the progression, from directly modeling and unitary counting to the point where they are fluently using recall and strategies, they typically will use multiple approaches simultaneously on different problems and with different numbers throughout their first few years of school; that is, depending on the problem, they may appear to be at different developmental

facts, research suggests that timed testing should be avoided. There are more effective methods of practice that will not “adversely affect students’ disposition towards mathematics” (NRC 2001, 193). Henry and Brown (2008) found a negative correlation between timed testing and Basic Facts Competence (fluency) for addition and subtraction facts (169). In contrast, student use of derived-fact strategies in conjunction with retrieval from long-term memory demonstrated a stronger correlation with Number Sense Proficiency than student use of retrieval alone.

Thus for most facts, memorization and instant recall from long-

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