Operations and Algebraic Thinking

In second grade, children continue their work with addition and subtraction. They work on word problems within 100 by representing and solving three types of one- and two-step word problems–*result* unknown, *change* unknown, and *start* unknown.

Children internalize addition and subtraction facts within 20 and develop fluency by repeatedly using strategies that make sense to them. They move beyond counting and counting-on to methods such as make a ten, "doubles," and "near doubles." They are called to know from memory all sums of two one-digit numbers. The goal is to give children many experiences using manipulatives and visual representations, not to simply present a list of facts for them to memorize.

Second graders use their knowledge of "doubles" to understand the concepts of *odd* and *even*. They learn that if a number can be broken into two equal addends, then the number is even. They determine whether a group of objects has an odd or even number of members by using strategies such as pairing objects, counting by 2's, and writing an equation. Children also use arrays to work with repeated addition, a foundational concept necessary for learning multiplication.

The Grade 2 Common Core State Standards for Operations and Algebraic Thinking specify that children should–

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

The following hands-on activities help children internalize addition and subtraction facts and solve one- and two-step problems. Mathematically proficient second graders develop a foundation for applying problem-solving strategies and become independently proficient at using those strategies to solve new tasks. They are expected to persevere while solving tasks when "stuck" by re-examining the task in different ways, figuring what they know and don't know, and continuing to solve it.