Operations and Algebraic Thinking

In Kindergarten, children use numbers to solve quantitative problems. They choose, combine, and apply effective strategies for answering quantitative questions. Children represent addition and subtraction with objects in many ways–by using fingers, drawings, rhythms, role-play situations, and equations–to learn that objects can be joined (addition) and separated (subtraction). At this stage, they focus on the concepts of joining and separating, not on reading and solving addition and subtraction equations with related symbols (+, –, =).

More specifically, Kindergarteners decompose numbers less than or equal to 10 into pairs in more than one way. They develop an understanding of part-whole relationships as they recognize that a set of objects can be broken into smaller subsets and remain the same total amount. Breaking apart a set (decomposing), children use the understanding that a smaller set of objects exists within that larger set (inclusion).

Kindergarteners solve addition and subtraction word problems to add and subtract within 10. For any number from 1 to 9, children find the number that makes 10 when added to the given number. They build upon the understanding that a number less than or equal to 10 can be decomposed into parts to find a missing part of 10. They use four types of problem-solving strategies to solve such problems: add to result unknown, take from result unknown, put together/take apart total unknown, and put together/take apart addend unknown.

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

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

The following hands-on activities give children opportunities to model simple joining and separating situations and to begin to develop fluency in addition and subtraction within 5. Children develop fluency when they internalize the relationships between and among numbers and children demonstrate fluency when they show accuracy, efficiency, and flexibility.