## UNIT 5: Shadows and Reflections Composing and Decomposing Numbers

Information from Big ideas of Early Mathematics (2014) by Erikson Early Math Collaborative

This unit has several lessons on composing and decomposing numbers. "Seeing" the smaller numbers inside larger ones requires that children have these foundational skills:

- Number recognition and identification
- A sense of quantity
- Subitizing
- Part-Part-Whole Relationships
- Sets- creating, comparing, and breaking down (decomposing) sets
- Seeing groups of numbers as relationships

Most of these ideas are best presented to young children through manipulatives. Children begin creating sets very early in their lives. A 3 year old may sort her cars in two groups: red and blue. While her counting skills may just be emerging, she can typically do a visual estimation about which set has more. Visually comparing sets is a counting strategy. In this unit, tools such as the 10 frame assist children with comparing sets. Placing manipulatives and sorting tools in the math center on a daily basis encourages children to create sets as a natural part of their play.

Use classroom problems that arise spontaneously to teach the composition and decomposition of numbers and the relationship between sets. *There are 5 children who want to paint and 6 children who want to play in the Home Center, and 3 who want to build. How many all together? 4 children have painted at the art table. How many more want to paint before center time is over? Oh look, today we have the same number of children with tie shoes as with Velcro shoes! These groups are equal! Let's create a color line as we line up to go outside. First, the blue-clothes group come to the door. Then, red.... (This is a very similar activity to Making Tall Trees in Week 1 Small Group.)* 

Geometric figures can help children with the basic concept that a whole thing can be broken down into parts. There are many specially designed manipulatives that can help children with this concept, including shape puzzles. However, many everyday toys also reinforce this idea in a different way. A toy truck, for example, has many parts that make up a whole...tires, a steering wheel, seats... Although seeing the parts in whole geometric figures is different from composition of number, you can focus on this very important but basic idea: *Whole things can be made up of parts.* 

Many stories have ideas about composition and decomposition of number. In the book *The Doorbell Rang*, a bookshelf book for this unit, children "break down" the dozen cookies into smaller groups as more people come to the door. *Five Creatures* activities in Week 5 are all about creating subsets from a larger set (the entire classroom).

PreK children will typically NOT master all of the concepts included in composing and decomposing numbers. Provide them with multiple, contextual experiences as a solid foundation for Kindergarten

and the Primary Grades, when children will transition from using manipulatives to writing numbers in equations.. Discovering that larger numbers are made up of smaller numbers is a **BIG** deal for children and is a yearlong preK focus. It is **crucial** that the concepts be fully explored to ensure genuine understanding rather than rote memory. Don't be concerned with whether children can write number relationships using numerals and symbols. **They can demonstrate their understanding with manipulatives, people math and whole body experiences.** Children will explore these relationships and ideas over a long period of time that begins in PreK and extends into the primary years.