



Understanding the Relationship between Numbers and Quantities: Subitising, Conservation of Quantity, Comparison of Numbers, Part-whole Relationship

Number sense is beyond knowing number names or counting. It is about understanding the relationships between numbers and quantities, such as:

Subitising	Subitising (i.e., the instant recognition of the quantity of a collection of objects without the need to count them one by one) is an important skill that relates to the development of children's number sense. Children who can identify small quantities in different arrangements, such as those on dominoes or dice, without counting them one by one, are developing their understanding of number conservation.
Conservation of quantity	Conservation of quantity is the understanding that the quantity does not change with the physical rearrangement of objects in a set. For example, spreading out or putting closely a group of objects does not affect its quantity. When children understand conservation of number, they know that two sets of five objects have the same quantity even if the objects of one set are arranged further apart from one another.
Comparison of numbers	Comparison of numbers helps to show how the numbers are related and is the foundation for understanding operations, such as addition and subtraction. Children often have some concept of "more than" and "same as", and this knowledge should be developed before "less/fewer than" which is a more difficult concept. Numbers are arranged and counted in an order where each number represents a quantity that is one more than the previous quantity. Early numeracy experiences for children should focus on determining whether one set of objects is the same as, more than or less than the other set of objects. For example, when children see a plate of five apples and a plate of two apples, they are able to determine that the plate of five apples has more apples than the plate of two apples. Once children are able to determine that one set of objects is more/less than or the same as the other set of objects, it would then be useful to proceed to focus on getting them to determine how many more or how many less/fewer objects there are.
Part-whole relationship	Part-whole relationship is an understanding that a number can be composed of or decomposed of/broken up into smaller parts. Children should understand that any number can be represented in parts. For example, a set of six bangles can be made up of two and four bangles or five and one bangles. When children can interpret a quantity in terms of its parts, it promotes the development of their cognitive flexibility and lays the foundation for understanding operations such as addition where they understand formal operations, e.g., $6 = 2 + 4$ or $6 = 5 + 1$, which they will encounter in primary school.