

Grade Level : Kindergarten

Standard: NS 2.1 Use concrete objects to determine the answers to addition and subtraction problems (for two numbers that are each less than 10)

In a “perfect” program I should see:

- **A Balanced Program:**
 - Conceptual Knowledge
 - Procedures & Computation
 - Problem Solving
- Emphasis on how addition and subtraction are connected (e.g. addition names the whole in terms of the parts, and subtraction names a missing part)
- Emphasis on how subtraction facts are a natural consequence of having learned addition/ the inverse relationship between addition and subtraction (e.g. fact families: $13 - 4$ is 9 since $4 + 9$ is 13)
- **Direct modeling of story problems w/ manipulatives:**
 - Join: Result Unknown (e.g. Alex has 6 candies. Maria gave him 2 more. How many candies does Alex have altogether?)
 - Join: Change Unknown (e.g. Alex has 6 candies. Maria gave him some more. Now Alex has 8 candies. How many did Maria give him?)
 - Separate: Result Unknown (e.g. Alex has 8 candies. He gave 2 candies to Maria. How many candies does Alex have now?)
 - Separate: Change Unknown (e.g. Alex has 8 candies. He gave some to Maria. Now he has 6 candies. How many did he give to Maria?)
- Doesn't start with the symbolic conventions (+ / -) but builds first on the understanding of what these mean
- Manipulatives (e.g. counters, drawings, and number lines with appropriate pace and practice to move from concrete to symbolic)
- Comparison (difference) and take-away models of subtraction taught
- Builds the understanding that both sides of the equal sign stand for the same quantity (e.g. when using the equal sign it refers to it as “the same as”)
- Looking at addition/subtraction using the 100's chart (it can be folded to show only numbers up to 30 or a chart that goes up to 30 can be used)
- Further develops the use of the 10 frames (e.g. Start with 10 add 1, ask how many do I have now?/ 8 is $5 + 3$, $4 + 4$, $2 + 6$)
- Application of numbers to the real world
- Count on/ count back
- Higher level problem solving
- Mathematical reasoning embedded in all of the above (with specific questioning to help students gain a true understanding of the “why”)