

THINKING WITH NUMBERS

Lesson Descriptions

Reasoning Strategies

Addition and subtraction involves much more than counting to get the answer. The reasoning strategies that go beyond counting enable children to efficiently, flexibly, and fluently use addition and subtraction in everyday life. Strategies that help children make sense of basic facts include: counting on to add, counting back to subtract, counting up to subtract, using ten to add and subtract, and using known facts to add and subtract. Each of these strategies can be used with larger numbers as well. Strategies like using ten and using known facts provide a solid base for mental math. Additionally, using nice numbers, like multiples of tens, adds to children's repertoire of mental math strategies. Estimating using front-end numbers, nice numbers, bounds, and rounding provide multiple ways for children to use numbers. It takes time for children to make sense and then to integrate these new thinking strategies into their solution processes for math problems. These lessons use animation to concretely illustrate each new thinking process and provide enough lessons to ensure success. Reasoning strategies are the gateway to number sense.

Expected content outcomes include helping children learn:

- multiple reasoning strategies for solving addition and subtraction problems,
- to develop flexibility and fluency with the use of these reasoning strategies,
- to confidently master basic facts, and
- to confidently use addition and subtraction in everyday life.

