Home Connections in Mathematics Jan. 2018

Addition Strategies that Make Sense

"The ability to compose and decompose numbers is an important aspect of number sense that contributes significantly to children's success in arithmetic, particularly addition and subtraction." ~ Cathy Bruce (2013)

How would you solve 46 + 38? Many of us would stack the two numbers and add them the way we were taught. Our curriculum requires teachers to develop with students methods grounded in understanding. With this in mind, let's look at the meanings of addition and strategies built on understanding.

Meanings of Addition

Although addition always relates to the combining of things, there are two situations to consider: one is active and one is static.

a) An active addition situation:
"Kara had 5 pencils. Her mom gave her 6 more pencils. How many pencils does she have altogether?"

b) A static addition situation (no action takes place): "Kara has some pencils in her pencil case. 7 are blue and 6 are red and 3 are yellow. How many pencils does she have?

Students often find it easier to first consider active situations, where joining actually occurs, and later more static situations, where a whole is made up of two or more parts that are already joined.

What strategies help with addition?
All strategies are based on breaking apart numbers and adding in parts.

46 + 38

Splitting: This strategy splits (decomposes) and joins (composes) numbers in ways that make computation easier. It ensures that students are thinking about the value of the numbers.
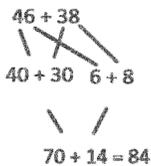

$$46 = 40 + 6$$
$$38 = 30 + 8$$
$$70 + 14 = 84$$

Jumping: This strategy involves sequential "jumps" on an open number line, by or to numbers that make the operation easier. The use of a number line allows students to maintain their sense of quantity as they add numbers together, and is less prone to computational errors. Two different jumping strategies are shown below. The first example shows three jumps of 10, then a jump of 4 to get to 80, then 4 more. The second example shows a jump of 4 to get to 50, then a jump of 34 more.

46 + 38
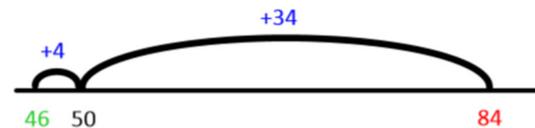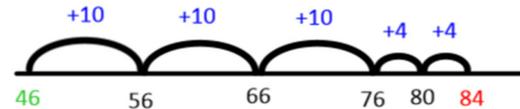
Compensating: Sometimes it may be more helpful to add too much and then subtract the extra. In this case, the student adds 40 to 46 to get 86, and then subtracts 2 to get 84.

46 + 38
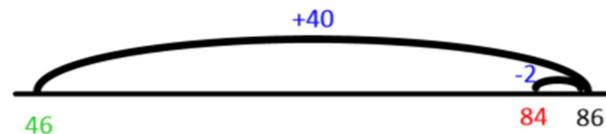
With practise, students will learn to operate flexibly with numbers, choosing from meaningful strategies. We encourage you to try some of these strategies at home with your child.

Try This!

Try the following addition questions with your child. Which strategy do they find the most effective? Then make up some real-world addition problems for them to solve.

24 + 26   68 + 19   18 + 57