## Calculation Means Finding the Decimal Representation of the Result

What is "calculation?" Figuring out the result of an exercise, of course. But this is only a partial answer, which does not touch on the main point. For the last thousand years most of mankind has been representing numbers using the decimal system, and hence the essence of calculations is in figuring out the decimal representation of the result.

Before the decimal system was invented, calculators had a simple life. The number 4, for example, was represented by | | | |. The meaning of a calculation such as $8 + 4$ was to draw 8 sticks, and 4 more alongside them. The result was also written using the same marking, like this:

| | | | | | | | + | | | | = | | | | | | | | | | | | .

Is there any sophistication to such calculations? None at all. The caveman did not need to send his children to school to learn this. All the knowledge required here is that the meaning of addition is "to join" — the result is achieved by joining the two sets of lines. It does not require any calculation.

Nowadays the same exercise is written differently: $8 + 4 = 12$. Is there any cleverness in this? Is there any point in learning this in school? This time the answer is a decisive "yes." This requires a true operation: the grouping of a ten. Of the 12 lines in the result, ten are grouped into one ten. This calculation provides information: The result includes one ten and two ones. Something has been said here about *the decimal representation of the result.*

**Calculation is figuring out the decimal representation of the result from the decimal representation of the problem's components.** This is one of the reasons why knowing how to calculate is so important in elementary school. Its purpose isn't just to figure out the results of problems, but also to achieve a deeper understanding of the decimal system.