



## Natural Summation

### 1 Why

We want a notation for expressing the sum of several natural numbers.

### 2 Definition

Let  $s = (m_1, \dots, m_n)$  be a sequence of natural numbers. The *sequence sum* of  $s$  is the result of first summing the first two numbers, then summing the result with the third number, and so on, until we have summed all the numbers

#### 2.1 Notation

We denote the sum of a sequence using by using the  $\sum$  symbol.  $\sum$  is the capital greek letter "sigma" and is a mnemonic for "sum."

Let  $(m_1, \dots, m_n)$  be a sequence of natural numbers. Let us denote by  $m_i$  an element of the sequence, where  $i = 1, \dots, n$ .

We denote that the sum ranges over an (ordered) index set  $\{1, \dots, n\}$  by writing  $\sum_{i=1}^n$ . We denote the sequence sum

$$\sum_{i=1}^n m_i.$$