



Associative Operations

1 Why

We introduce language for the case in which an operator can be applied to three or more elements of the set in any order.

2 Definition

An operation **associates** if given any three elements in order it doesn't matter whether we first operate on the first two and then with the result of the first two the third, or the second two and with the result of the second two the first.

Given n elements of the set, the associativity allows us to operate on pairs in any order.

2.1 Notation

Let A be a non-empty set and let $+: A \times A \rightarrow A$ be an operation. If $+$ associates, then

$$(a + b) + c = (a + b) + c$$

for all $a, b, c \in A$.