



## ASSOCIATIVE OPERATIONS

### Why

We name operations for which we can operate on objects in different order.

### Definition

An operation *associates* (or is *associative*) 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.

### 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  $a, b, c \in A$ .



