Definition

We denote by $\mathbb{Z}_n$ the set $Z/\sim_n$, i.e. the set of equivalence classes under $\sim_n$.

There are n equivalence classes:

$$[0], [1], [2], \ldots, [n-1]. \tag{1}$$

Definition

Let us define two operations on $\mathbb{Z}_n$, $+_n$ and $*_n$:

$$[x] +_n [y] = [x + y], \quad [x] *_n [y] = [xy].$$

Theorem

The operations $+_n$ and $*_n$ are well-defined.