



Why

What are addition and multiplication for integers? What are the identity elements?

Definition

We call the operation of forming integer sums *integer addition*. We call the operation of forming integer products *integer multiplication*.

Results

It is easy to see the following.¹

Proposition 1. *The additive identity for \mathbf{Z} is $[(0, 0)]$.*

Proposition 2. *The multiplicative identity for \mathbf{Z} is $[(1, 0)]$.*

Notation

We denote the additive identity of \mathbf{Z} by $0_{\mathbf{Z}}$ and the multiplicative identity by $1_{\mathbf{Z}}$. When it is clear from context, we call $0_{\mathbf{Z}}$ “zero” and we call $1_{\mathbf{Z}}$ “one”.

Distributive

Proposition 3. *For integers $x, y, z \in \mathbf{Z}$, $x \cdot (y + z) = x \cdot y + x \cdot z$.*²

¹Nonetheless, the full accounts will appear in future editions.

²An account will appear in future editions.

