

INTEGER ARITHMETIC

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 Z is [(0,0)].

Proposition 2. The multiplicative identity for Z is [(0,0)].

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 $x, y, z \in \mathbf{Z}$, $x \cdot (y+z) = x \cdot y + x \cdot z$.

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

²An account will appear in future editions.

