



## Why

We want sums to follow those of natural numbers.<sup>1</sup>

## Definition

Consider  $[(a, b)], [(b, c)] \in \mathbf{Z}$ . The *integer product* of  $[(a, b)]$  with  $[(b, c)]$  is  $[(ac + bd, ad + bc)]$ .<sup>2</sup>

## Notation

We denote the product of  $[(a, b)]$  and  $[(c, d)]$  by  $[(a, b)] \cdot [(b, c)]$ . So if  $x, y \in \mathbf{Z}$  then the sum of  $x$  and  $y$  is  $x \cdot y$ . As with natural products, we often drop the  $\cdot$  and write  $xy$  for  $x \cdot y$ .

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<sup>1</sup>Future editions will modify this.

<sup>2</sup>One needs to show that this is well-defined. The account will appear in future editions.



