Why

We want to order the integers.

Definition

Consider $[(a,b)], [(b,c)] \in \mathbf{Z}$. If $a + d < b + c$, then we say that $[(a,b)]$ is *less than* $[(b,c)]$.[1] If $[(a,b)]$ is less than $[(b,c)]$ or equal, then we say that $[(a,b)]$ is *less than or equal to* $[(b,c)]$.

Notation

If $x, y \in \mathbf{Z}$ and x is less than y, then we write $x < y$. If x is less than or equal to y, we write $x \leq y$.

Positive and negative integers

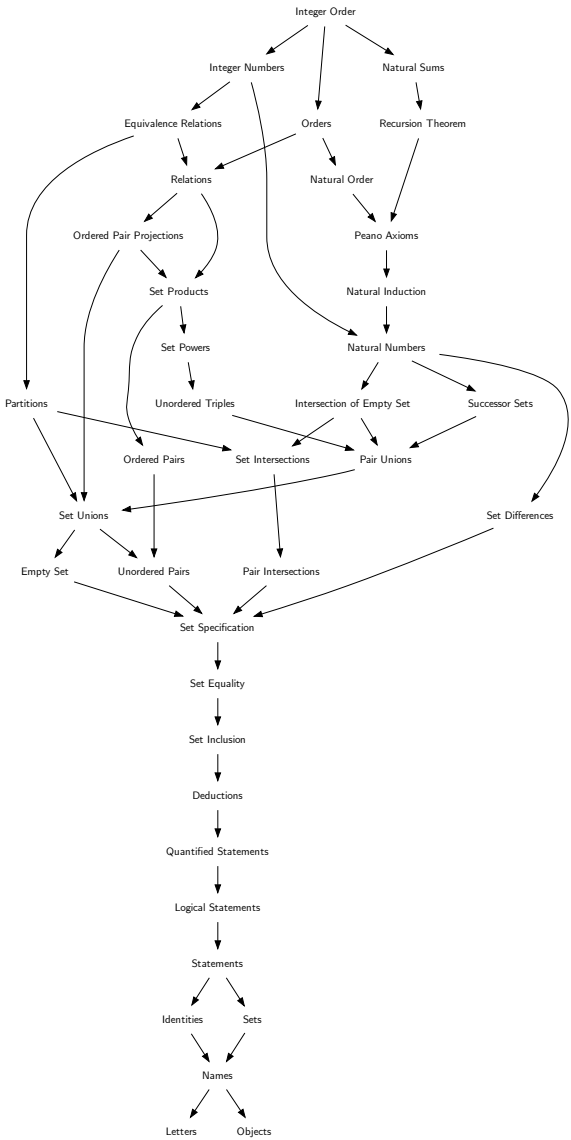
We call an integer z *positive* if $z > 0$ and we call z *negative* if $z < 0$.[2] We call an integer z *nonnegative* if $z > 0$ or $z = 0$ and *nonpositive* if $z < 0$ or $z = 0$.

Notation

We denote the set $\{z \in \mathbf{Z} \mid z \geq 0_Z\}$ by $\mathbf{Z}_{++}$.

[1] One needs to show that this is well-defined. The account will appear in future editions.

[2] Some authors use the term positive for the case when $z > 0$ or $z = 0$. We use the term nonnegative in this case.


Integer Order
Integer Numbers
Natural Sums
Equivalence Relations
Orders
Recursion Theorem
Relations
Natural Order
Ordered Pair Projections
Peano Axioms
Set Products
Natural Induction
Set Powers
Natural Numbers
Partitions
Unordered Triples
Intersection of Empty Set
Successor Sets
Ordered Pairs
Set Intersections
Pair Unions
Set Unions
Set Differences
Empty Set
Unordered Pairs
Pair Intersections
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects