Why

We want to count the number of elements in a set.

Defining result

Proposition 1. *A set can be equivalent to at most one natural number.*[1]

The *number* of a finite set is the unique natural number equivalent to it. We also call this the *size* of the set.

Notation

We denote the number of a set by $|A|$.

Restriction to a finite set

If we restrict $E \quad |E|$ to the domain $\mathcal{P}(X)$ of some set X then $|\cdot| : \mathcal{P}(X) \to \omega$ is a function.[2]

Properties

Proposition 2. $A \subset B \longrightarrow |A| \leq |B|$

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[1]A proof will appear in future editions.

[2]Future editions will clarify this point.

Set Numbers

Finite Sets

Equivalent Sets

Natural Order   Function Inverses

Function Composites   Function Images

Equivalence Relations   Functions

Peano Axioms   Relations

Natural Induction   Ordered Pair Projections

Set Products

Natural Numbers   Set Powers

Intersection of Empty Set   Successor Sets   Partitions   Unordered Triples

Set Intersections   Pair Unions   Ordered Pairs

Set Differences   Set Unions

Pair Intersections   Empty Set   Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities   Sets

Names

Letters   Objects