Why

We name sequences of sequences, and so on.

Definition

Let s be a sequence of natural numbers: $s = (n_1, \ldots, n_d)$. An *array* of *size* (or *shape*) s is a function whose domain is the set

$$I = \{(m_1, \ldots, m_d) \mid 1 \leq m_1 \leq n_1, \ldots, 1 \leq m_d \leq n_d\}.$$

We call the set I the set of *indices* of the array. We call the codomain of the function the set of *values* of the array. If A is the set of values, we say that the array is *in* A. We call the length of s (here denoted d) the *dimension* of the array.

Case $d = 1$

If the shape of the array has length one, then the array is no different from a sequence. In this case, the terminology for arrays coincides with that for sequences.

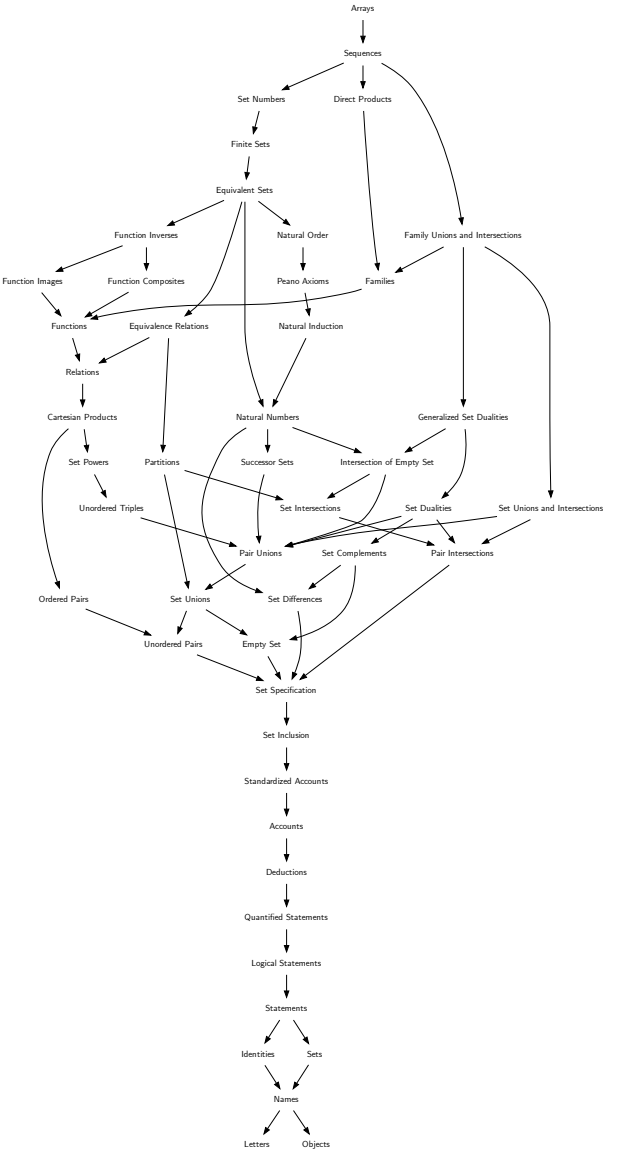
Case $d = 2$

If the shape of the array has length two, then the array can be thought of as a table with n_1 rows and n_2 columns.[1] We say that the array is two-dimensional.

[1] Compare with Matrices

Simplified indices

In the case that a is a one-dimensional array, or sequence, we use the common terminology a_i for the ith element of a In the case that a is a two dimensional array, we write a_{ij} for $a_{(i,j)}$.


Arrays
Sequences
Set Numbers
Direct Products
Finite Sets
Equivalent Sets
Function Inverses
Natural Order
Family Unions and Intersections
Function Images
Function Composites
Peano Axioms
Families
Functions
Equivalence Relations
Natural Induction
Relations
Cartesian Products
Natural Numbers
Generalized Set Dualities
Set Powers
Partitions
Successor Sets
Intersection of Empty Set
Unordered Triples
Set Intersections
Set Dualities
Set Unions and Intersections
Pair Unions
Set Complements
Pair Intersections
Ordered Pairs
Set Unions
Set Differences
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects