Why

We name lists of lists, 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.

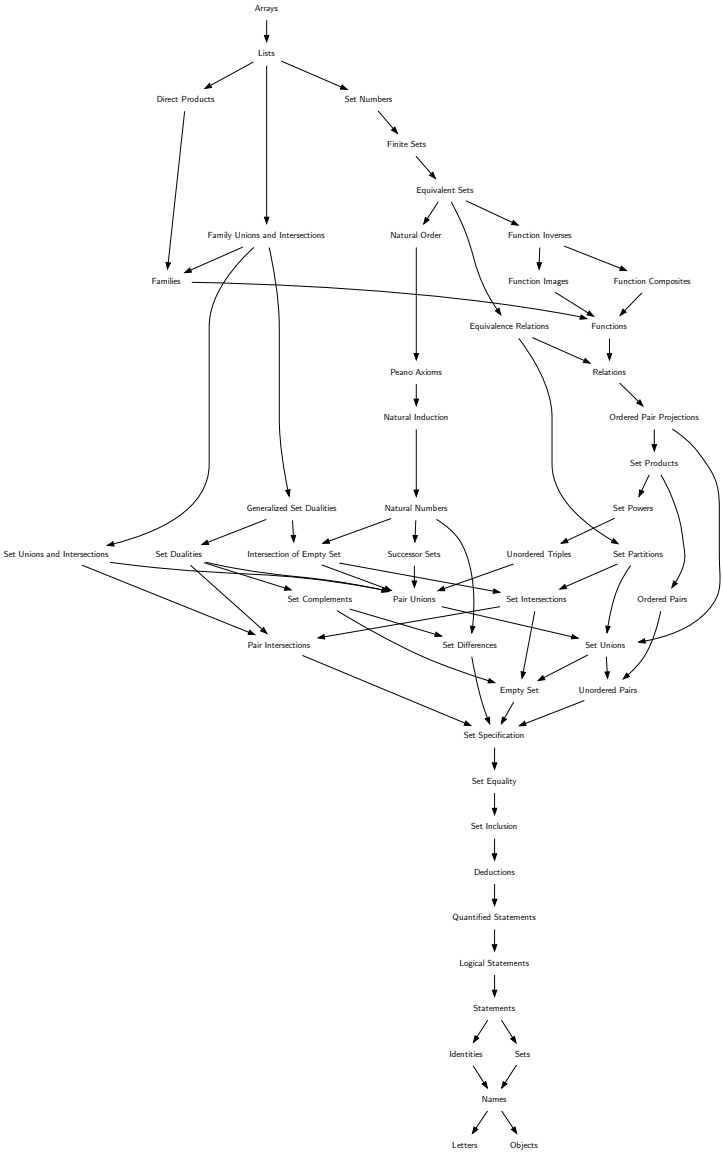
Case $d = 2$

If the shape of the array has length two, then the array can is a *table* with n_1 rows and n_2 columns.[1] We say that the array is two-dimensional. We denote the $n_1 \times n_2$ array with elements in the set A by $A^{n_1 \times n_2}$.

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 $a_{(i,j)}$.

[1] Compare with Matrices.


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