Why

We return to our discussion of symbols and scripts, to make precise these concepts in the language of sets and sequences.

Definition

An *alphabet* is a finite set. For example, let A be the set

$$\{a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z\},$$

where a denotes the latin lower case letter "a", b denotes the latin lower case letter "b", and so on. In other words, A is the set of lowercase latin letters. It is an alphabet. By analogy with this familiar case, we frequently refer to the elements of an alphabet as "letters" or "symbols."

A *word* is a finite sequence of letters in an alphabet, and a *phrase* is a finite sequence of words. For example, (c, a, t, s) is a word in $\mathcal{A}$ (mean to correspond to the word "cats") and

$$((c, a, t, s), (a, n, d), (d, o, g, s))$$

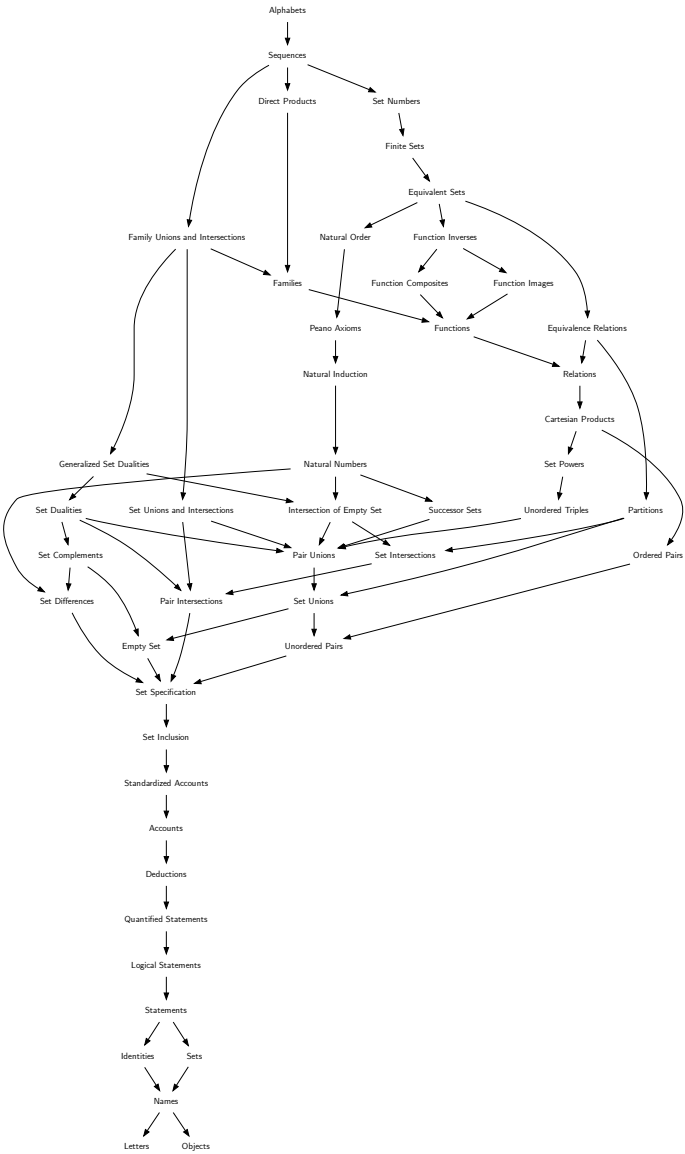
is a phrase in $\mathcal{A}$ (meant to correspond to the phrase "cats and dogs").

Strings

Let A be an alphabet. In this case (in which A is a finite set), we refer to the finite sequences of A as *strings*. The length zero string is $\varnothing$.

Notation

We denote the set of all finite sequences (strings) in A by $\mathcal{S}(A)$. We read $\mathcal{S}(A)$ aloud as "the strings in A."


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