



ALPHABETS

Why

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

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 list of letters in an alphabet, and a *phrase* is a list 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 string whose length is zero is the empty set.

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 .”

