Why

$\{a\} \cup \{b\} = \{a, b\}$

Definition

Let a, b and c denote objects. From the associativity of pair unions (see Pair Unions), we have

$$(\{a\} \cup \{b\}) \cup \{b\} = \{a\} \cup (\{b\} \cup \{c\}).$$

So we will drop the parentheses, and write $\{a\} \cup \{b\} \cup \{c\}$. We call such a set the *unordered triple* of a, b and c. The unordered triple of a, b and c is the set containing these elements and no others.

Notation

Such sets are so commonplace that we denote the unordered triple of a, b and c by $\{a, b, c\}$.

Quadruples

Let d denote an object. Again, the associativity of pair unions allows us to drop the parentheses from

$$(((\{a\} \cup \{b\}) \cup \{c\}) \cup \{d\})).$$

We can therefore write $\{a\} \cup \{b\} \cup \{c\} \cup \{d\}$ without ambiguity. We call this set the *unordered quadruple*. As before, the unordered quadruple contains of a, b, c and d contains a, b, c, and d and nothing besides these.

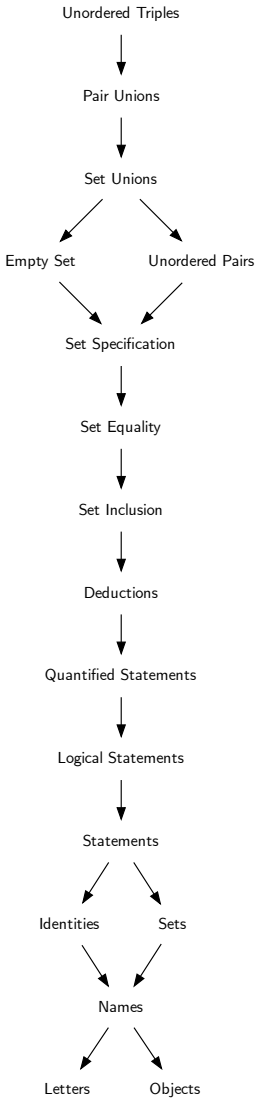
Notation

We denote the unordered quadruple of the objected denoted by a, b, c and d, denote this set by $\{a, b, c, d\}$.

The case of several named objects

In a similar way we speak of *unordered pentuples*, *unordered sextuples*, *unordered septuples* and so on. If we have several objects named, we denote the set containing these objects be writing their names in between the left brace { and right brace}, separating the names by commas. For example, if we A, b, x and Y and z denote objects, then we denote the set containing these elements by

$$\{A, b, x, Y, z\}.$$


Unordered Triples
Pair Unions
Set Unions
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects