Why

We want to talk about particular attributes of an outcome, instead of the details of the outcomes themselves. These may be useful to specify events.

An *outcome variable* (or *random variable*) is a function from Ω to V, where V is a set. In this context, V is called the set of *values* of the random variable.

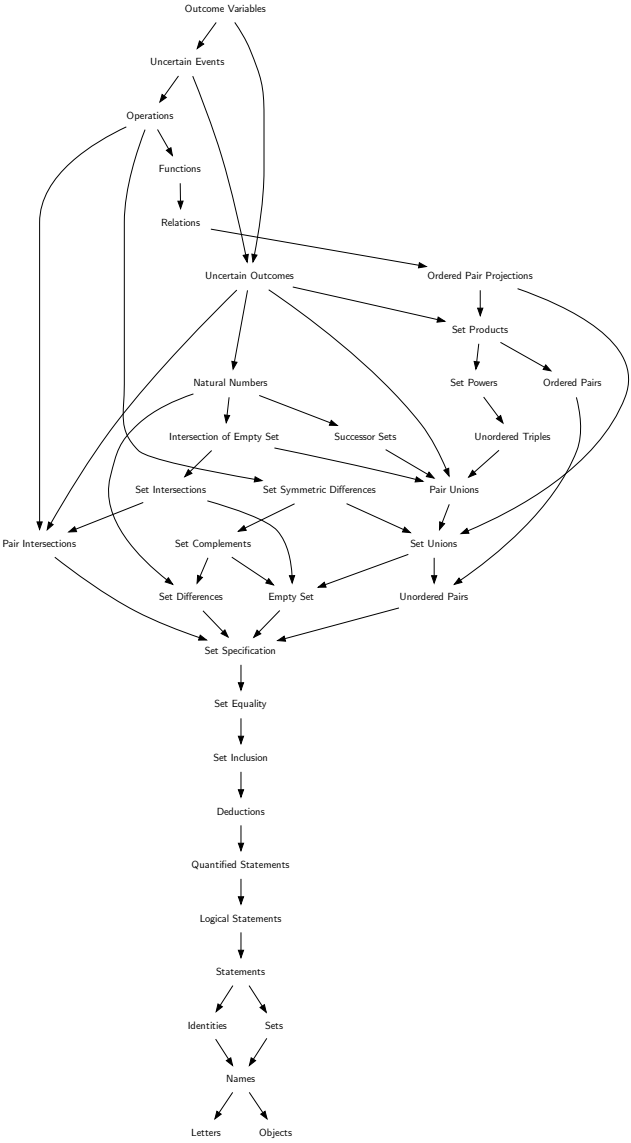
Example: two dice

We want to talk about the sum of the pips shown facing up after rolling two dice. We may take as our set of outcome $\{1, \ldots, 12\}$, whose elements correspond to the sum. We interpret $\{x \in \Omega \mid x \geq 10\}$ as the event that the sum of the two dice is greater than or equal to 10.

Alternatively, we may take the outcomes $\{1, \ldots, 6\}^2$ and define an outcome variable $s : \{1, \ldots, 6\}^2 \to \{1, \ldots, 12\}$ by

$$s((d_1, d_2)) = d_1 + d_2.$$

We interpret this natural-number-valued outcome variable s as sum of the two dice. The event that the sum of the two dice is greater than or equal to to 10 corresponds to the set $\{(d_1, d_2) \in \{1, \ldots, 6\} \mid s((d_1, d_2)) \geq 10\}$.


Outcome Variables
Uncertain Events
Operations
Functions
Relations
Uncertain Outcomes
Ordered Pair Projections
Set Products
Natural Numbers
Set Powers
Ordered Pairs
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Intersections
Set Symmetric Differences
Pair Unions
Pair Intersections
Set Complements
Set Unions
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects