

symbols

A, B, C ...

sets

A the set of ice bears
B the set of penguins
C the set of birds
D the set of white animals
E the set of flying animals
F the set of non flying animals
G the set of animals
 ϕ the empty set

set relations

element \in
 $x \in A$ x is an ice bear

subset \subset
 $B \subset C$ penguins are birds

union \cup
 $E \cup F = G$ birds do either fly or do not

intersection \cap
 $E \cap B = \phi$ penguins do not fly

complement $-$
 $\bar{E} = F$ those who do not fly aren't able to fly

propositions

H The bear is white.
I The bear is black.
J There are traces in the snow.
K Snow fell.
L An ice bear came along.

signs

combinators

conjunction \wedge , AND, *
 $H \wedge I$ A Panda bear is white and is black.

disjunction \vee , OR, +
 $H \vee I$ A bear is white or is black.

negation \neg , NOT, -
 $\neg J$ The snow is plane.

implication \Rightarrow
 $L \Rightarrow J$ An ice bear came along, so there are traces.

quantifiers

all quantor \forall , all
 $\forall x \in A: x \in D$ For all ice bears: they are white.
Ice bears are white.

existence quantor \exists , one, some
 $\exists x \in C: \neg x \in E$ There are birds who cannot fly.
Some birds aren't able to fly.

first order predicate logic

- symbols
- sets
- propositions
- quantifiers

See also
Algebraic Semantics in Language and Philosophy
by Godehard Link

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