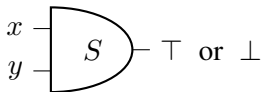# Predicates

Predicates

In grammar, a **predicate** is the part of a sentence containing a verb and stating something about the subject.

We will view a predicate as a function which accepts as input a subject (or subjects) and returns as output a truth value.

Example.

1. "Alice and Bob are siblings."
   1. Subject: (Alice, Bob).
   2. 2-variable Predicate: $(S(x, y))$ "are siblings".

$$
\begin{array}{c}
x \\
y
\end{array}
\!-\!\!\boxed{S}\!\!\rangle\!-\ \top \ \text{or} \ \bot
$$

Examples of predicates

1. $P(x, y)$: $x < y$.

2. $Q(x, y, z)$: $x^2 + y^2 = z^2$.

3. $R(k, \ell)$: Line k and line ℓ are parallel.

4. $S(x, y)$: x and y are siblings.

5. $T(x, y)$: x is older than y.

6. $S(x, y) \wedge T(x, y)$: x and y are siblings and x is older than y.