Mathematical Induction

Peano's axiom of induction states:
Let V be a set such that:

$$0 \in V \text{ and,}$$

$$\text{for all } n \in \mathbb{N}, \text{ if } n \in V \text{ then: } Succ(n) \in V,$$

$$\text{then } \mathbb{N} \subseteq V$$

This principle states a **closure condition**: N is the smallest set that contains 0 and is closed under $Succ$ (so applying $Succ$ to an element of N gives an element of N).

It cannot be proved to satisfy this, we assume it.