A **proof by induction** consists of **two** cases.

The **first**, the **base case** (or **basis**), proves the statement for $n = 0$ without assuming any knowledge of other cases.

The **second** case, the **induction step**, proves that *if* the statement holds for any given case $n = k$, *then* it must also hold for the next case $n = k + 1$. These two steps establish that the statement holds for every natural number n.

The base case does **not necessarily** begin with $n = 0$, but often with $n = 1$, and possibly with any fixed natural number $n = N$, establishing the truth of the statement for all natural numbers $n \geq N$.