A ***proof by induction*** for the proposition "$P(n)$ for every positive integer n" is nothing but a direct proof of the more complex proposition "$(P(1) \wedge P(2) \wedge \cdots \wedge P(n-1)) \rightarrow P(n)$ for every positive integer n". Because it's a direct proof, it *must* start by considering an arbitrary positive integer, which we might as well call n. Then, to prove the implication, we explicitly assume the hypothesis $(P(1) \wedge P(2) \wedge \cdots \wedge P(n-1))$ and then prove the conclusion $P(n)$ *for that particular value of* n. The proof almost always breaks down into two or more cases, each of which may or may not actually use the inductive hypothesis.

Here is the boilerplate for *every* induction proof. Read it. Learn it. Use it.