

Things to watch out for in induction proofs

1. Do your base cases!
2. Your Inductive Hypothesis should be stated in terms of some statement $P(n)$ being true for some arbitrary n that is at least as big as the largest base case you looked at
3. Clearly state your Inductive Hypothesis (and label it as such) - and don't have it be what you want to prove!
4. For strong induction, don't confuse your variables with each other (they are not interchangeable)
5. It can be helpful to say what you want to show
6. Justify every step (e.g., every equality sign) that isn't due just to arithmetic
7. At the end, say something like "Because n was arbitrary, this shows that $P(n)$ is true for all n " or "By the principle of induction, this shows that $P(n)$ is true for all n "