How and What to write for a Proof by Induction

Problem: Use Mathematical Induction to prove

$$1^3+2^3+3^3+\dots+n^3 = \left[\frac{n(n+1)}{2}\right]^2 \quad \text{for } n \ge 1.$$

MUST

What you^r write down (in blue)	(my) Comments/explanations
$S(n)$ is $1^3+2^3+\dots+n^3 = \left[\frac{n(n+1)}{2}\right]^2$	Explicitly identify $S(n)$. ALWAYS write this.
	"Basis Step" is ALWAYS Present
Basis Step: $S(1)$ is $1^3 = 1 = \left[\frac{1\cdot 2}{2}\right]^2 = \left[\frac{1(1+1)}{2}\right]^2$,	Always check this case explicitly.
which is true.	Always state explicitly that it is true
Inductive Step: Assume $S(n)$, $1^3+2^3+\dots+n^3 = \left[\frac{n(n+1)}{2}\right]^2$, is true	ALWAYS identify the Inductive Step. Explicitly ~~ehe~~ State the inductive hypothesis
Now, $LHS = (1^3+2^3+\dots+n^3)+(n+1)^3 = \left[\frac{n(n+1)}{2}\right]^2 + (n+1)^3$ by the inductive hypothesis	ALWAYS start with one side of $S(n+1)$ and work to the other. DO NOT EVER use both sides simultaneously. IDENTIFY the side you are starting with unchanged. State when you use the inductive hypothesis.
$= \dfrac{n^2(n+1)^2+4(n+1)^3}{4}$ Common denominator	Explain your steps
$= \dfrac{(n+1)^2[n^2+4n+4]}{4}$ factor out $(n+1)^2$	
$= \dfrac{(n+1)^2(n+2)^2}{4}$ factor n^2+4n+4	
$= \left[\frac{(n+1)(n+2)}{2}\right]^2 = RHS$	End by obtaining and identifying the other side.